

Contract farming

Partnerships for growth

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Food
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Contract farming

Partnerships for growth

by

Charles Eaton

and

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Preface

Contract farming has been in existence for many years as a means of organizing the commercial agricultural production of both large-scale and small-scale farmers. Interest in it continues to expand, particularly in countries that previously followed a central planning policy and in those countries that have liberalized marketing through the closing down of marketing boards. Changes in consumption habits, such as the increasing number of fast-food outlets, the growing role played by supermarkets in many countries, and the continued expansion of world trade in fresh and processed products, have also provided the impetus for further development of this mode of production.

The purpose of this guide is not to replicate past socio-economic studies on the subject of contract farming. Rather, the aim is to provide advice: first, to management of existing contract farming companies on how to improve their operations; second, to companies that are considering starting such ventures on the preconditions and management actions necessary for success; and, last but not least, to government officials seeking to promote new contract farming operations or monitor existing operations. The guide describes in detail the general *modus operandi*, internal functions and monitoring mechanisms of contract farming. It emphasizes that sustainable contract farming arrangements are only possible when the various parties see themselves involved in a long-term partnership.

This One



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A considerable debt is owed to the employees and farmers of contract farming ventures in many countries who have contributed to the subject of crop agreements and management-farmer relationships. By sharing their knowledge and experiences they provided the inspiration and interest that made this publication possible.

Where references are made in the text to specific contract farming experiences, the source is usually acknowledged as a footnote. Where no acknowledgement is given, the source is either one of the unpublished case studies mentioned above or the unpublished experiences of the authors, in particular those of Charles Eaton.

Introduction

In an age of market liberalization, globalization and expanding agribusiness, there is a danger that small-scale farmers will find difficulty in fully participating in the market economy. In many countries such farmers could become marginalized as larger farms become increasingly necessary for a profitable operation. A consequence of this will be a continuation of the drift of populations to urban areas that is being witnessed almost everywhere.

Attempts by governments and development agencies to arrest this drift have tended to emphasize the identification of "income generation" activities for rural people. Unfortunately there is relatively little evidence that such attempts have borne fruit. This is largely because the necessary backward and forward market linkages are rarely in place, i.e. rural farmers and small-scale entrepreneurs lack both reliable and cost-efficient inputs such as extension advice, mechanization services, seeds, fertilizers and credit, and guaranteed and profitable markets for their output. Well-organized contract farming does, however, provide such linkages, and would appear to offer an important way in which smaller producers can farm in a commercial manner. Similarly, it also provides investors with the opportunity to guarantee a reliable source of supply, from the perspectives of both quantity and quality.

The contracting of crops has existed from time immemorial. In ancient Greece the practice was widespread, with specified percentages of particular crops being a means of paying tithes, rents and debts.¹ During the first century, China also recorded various forms of sharecropping. In the United States as recently as the end of the nineteenth century, sharecropping agreements allowed for between one-third and one-half of the crop to be deducted for rent payment to the landowner. These practices were, of course, a form of serfdom and usually promoted permanent farmer indebtedness. In the first decades of the twentieth century, formal farmer-corporate agreements were established in

¹ This system was known as *hektemoroi* or "sixth partners".

colonies controlled by European powers. For example, at Gezira in central Sudan, farmers were contracted to grow cotton as part of a larger land tenancy agreement. This project served as a model from which many smallholder contract farming projects subsequently evolved.

Contract farming can be defined as an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices. The arrangement also invariably involves the purchaser in providing a degree of production support through, for example, the supply of inputs and the provision of technical advice. The basis of such arrangements is a commitment on the part of the farmer to provide a specific commodity in quantities and at quality standards determined by the purchaser and a commitment on the part of the company to support the farmer's production and to purchase the commodity.

The intensity of the contractual arrangement varies according to the depth and complexity of the provisions in each of the following three areas:

- *Market provision:* The grower and buyer agree to terms and conditions for the future sale and purchase of a crop or livestock product;
- *Resource provision:* In conjunction with the marketing arrangements the buyer agrees to supply selected inputs, including on occasions land preparation and technical advice;
- *Management specifications:* The grower agrees to follow recommended production methods, inputs regimes, and cultivation and harvesting specifications.

With effective management, contract farming can be a means to develop markets and to bring about the transfer of technical skills in a way that is profitable for both the sponsors and farmers. The approach is widely used, not only for tree and other cash crops but, increasingly, for fruits and vegetables, poultry, pigs, dairy produce and even prawns and fish. Indeed, contract farming is characterized by its "enormous diversity"² not only with regard to the

² Jackson, J.C. and Cheater, A.P., 1994.

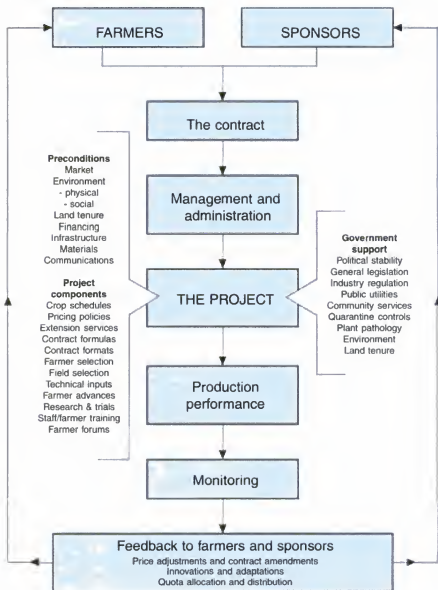
products contracted but also in relation to the many different ways in which it can be carried out.

The contract farming system should be seen as a partnership between agribusiness and farmers. To be successful it requires a long-term commitment from both parties. Exploitative arrangements by managers are likely to have only a limited duration and can jeopardize agribusiness investments. Similarly, farmers need to consider that honouring contractual arrangements is likely to be to their long-term benefit.

Contract farming is becoming an increasingly important aspect of agribusiness, whether the products are purchased by multinationals, smaller companies, government agencies, farmer cooperatives or individual entrepreneurs. As noted above, the approach would appear to have considerable potential in countries where small-scale agriculture continues to be widespread, as in many cases small-scale farmers can no longer be competitive without access to the services provided by contract farming companies. It must be stressed, however, that the decision to use the contract farming modality must be a commercial one. It is not a development model to be tried by aid donors, governments or non-governmental organizations (NGOs) because other rural development approaches have failed. Projects that are primarily motivated by political and social concerns rather than economic and technical realities will inevitably fail.

Figure 1 shows diagrammatically a hypothetical contract farming framework. It sets out those aspects that must be considered when planning and implementing a venture. These are discussed in detail in the following chapters. Chapter 1 initially reviews both the major advantages of contract farming and the problems associated with it. From the point of view of farmers, contractual arrangements can provide them with access to production services and credit as well as knowledge of new technology. Pricing arrangements can reduce risk and uncertainty. Some contract farming ventures give farmers the opportunity to diversify into new crops, which would not be possible without the processing and/or marketing facilities provided by the company. Offsetting these benefits, however, are the risks associated with the cultivation of a new crop, the fact that the company may fail to honour its commitments and the danger of indebtedness if problems arise. From the point of view of the

Figure 1
A contract farming framework



Source: based on Eaton, C.S., 1996b: 274

sponsoring companies, contract farming may in many cases be more efficient than plantation production, and will certainly be more politically acceptable. It can give them access to land that would not otherwise be available and the opportunity to organize a reliable supply of products of the desired quality, which probably could not be obtained on the open market. On the other hand, from the companies' perspective contract farming is not without difficulties. On occasion farmers may sell their outputs to outsiders, even though they were produced using company-supplied inputs. Conflicts can also arise because the rigid farming calendar required under the contract often interferes with social and cultural obligations.

Chapter 2 examines the preconditions for successful contract farming. The essential precondition is that there must be a market for the product that will ensure profitability of the venture. To justify investments it must be clear that the market will be profitable in the long as well as short run. The potential profitability for the sponsor must be calculated on the basis of assumptions about payments to farmers that will assure them consistent and attractive financial benefits. There is a range of other factors that affect the success of contract farming ventures. These include the physical, social and cultural environments; the suitability of utilities and communications; the availability of land; and the availability of needed inputs. An essential precondition is that management must have the necessary competence and structure to handle a project involving many small-scale farmers. Without this no investment can succeed. Another important requirement is government support. Contracts need to be backed up by law and by an efficient legal system. Existing laws may have to be reviewed to ensure that they do not constrain agribusiness and contract farming development and to minimize red tape.

There is a wide range of organizational structures that are embraced by the term "contract farming". The choice of the most appropriate one to use depends on the product, the resources of the company, the social and physical environments, the needs of the farmers and the local farming system. Chapter 3 describes the five basic models, which are defined as the centralized model, the nucleus estate model, the multipartite model, the informal or individual developer model and the intermediary model. Any crop or livestock product

can theoretically be contracted out using any of the models, though certain products can be said to favour certain approaches.

Chapter 4 considers the question of how contracts are framed and what specifications are included. Although it is rare that legal action is taken in the case of breach of contract, it is nevertheless usually important that the terms of the agreement are fully spelled out in the form of a contract or other legal agreement. The specifications of a contract can vary from the relatively simple, where the sponsor may only specify the quality standards applicable, to a detailed contract, which lays out input supply and cultivation arrangements, quality standards, and pricing and payment arrangements. Hitherto, many companies have failed to give sufficient importance to both the drafting of suitable contracts and explaining those contracts in a manner that farmers can understand.

Chapter 5 stresses the importance of good management and describes the many activities that must be carried out in order to manage the operations of the contract. It reviews the steps necessary to plan, organize, coordinate and manage production, including the identification of suitable land and farmers, the organization of farmers into working groups, the supply of inputs, the transfer of technology and the provision of extension services. It emphasizes the importance of developing harmonious management-farmer relationships and suggests ways of achieving this. This chapter also highlights the fact that contract farming, if managed badly, can often be a catalyst for antagonism between men and women, with men receiving the benefits while women do the major share of the work.

Promoters and sponsors of contract farming need to place particular importance on the monitoring of production. Quantity shortfalls, through the failure of farmers to meet their quotas, can reduce processing efficiency and jeopardize markets, as can the failure of farmers to produce the required qualities. Excessive production can lead to unpopular quota reductions. Techniques for monitoring yields and quality are discussed in Chapter 6. Companies should also monitor the performance of their employees, particularly those in close contact with the farmers. Chapter 6 concludes by stressing the obligation of all those involved in contract farming to address the impact of their activities on the physical environment.

Chapter 1

**Advantages and problems
of contract farming**

Contract farming has significant benefits for both the farmers and sponsors (investors). However, with these advantages also come problems. This chapter considers both advantages and problems from the standpoint of farmer and sponsor.

FARMERS

Advantages for farmers

- *Inputs and production services are often supplied by the sponsor*
- *This is usually done on credit through advances from the sponsor*
- *Contract farming often introduces new technology and also enables farmers to learn new skills*
- *Farmers' price risk is often reduced as many contracts specify prices in advance*
- *Contract farming can open up new markets which would otherwise be unavailable to small farmers*

Problems faced by farmers

- *Particularly when growing new crops, farmers face the risks of both market failure and production problems*
- *Inefficient management or marketing problems can mean that quotas are manipulated so that not all contracted production is purchased*
- *Sponsoring companies may be unreliable or exploit a monopoly position*
- *The staff of sponsoring organizations may be corrupt, particularly in the allocation of quotas*

- *Farmers may become indebted because of production problems and excessive advances*

SPONSORS

Advantages for sponsors

- *Contract farming with small farmers is more politically acceptable than, for example, production on estates*
- *Working with small farmers overcomes land constraints*
- *Production is more reliable than open-market purchases and the sponsoring company faces less risk by not being responsible for production*
- *More consistent quality can be obtained than if purchases were made on the open market*

Problems faced by sponsors

- *Contracted farmers may face land constraints due to a lack of security of tenure, thus jeopardizing sustainable long-term operations*
- *Social and cultural constraints may affect farmers' ability to produce to managers' specifications*
- *Poor management and lack of consultation with farmers may lead to farmer discontent*
- *Farmers may sell outside the contract (extra-contractual marketing) thereby reducing processing factory throughput*
- *Farmers may divert inputs supplied on credit to other purposes, thereby reducing yields*

Introduction

Well-managed contract farming is an effective way to coordinate and promote production and marketing in agriculture. Nevertheless, it is essentially an agreement between unequal parties: companies, government bodies or individual entrepreneurs on the one hand and economically weaker farmers on the other. It is, however, an approach that can contribute to both increased income for farmers and higher profitability for sponsors.³ When efficiently organized and managed, contract farming reduces risk and uncertainty for both parties as compared to buying and selling crops on the open market.

Critics of contract farming tend to emphasize the inequality of the relationship and the stronger position of sponsors with respect to that of growers. Contract farming is viewed as essentially benefiting sponsors by enabling them to obtain cheap labour and to transfer risks to growers.⁴ However, this view contrasts with the increasing attention that contract farming is receiving in many countries, as evidence indicates that it represents a way of reducing uncertainty for both parties. Furthermore, it will inevitably prove difficult to maintain a relationship where benefits are unfairly distributed between sponsors and growers.

The advantages, disadvantages and problems arising from contract farming will vary according to the physical, social and market environments. More specifically, the distribution of risks will depend on such factors as the nature of the markets for both the raw material and the processed product, the availability of alternative earning opportunities for farmers, and the extent to which relevant technical information is provided to the contracted farmers.⁵ These factors are likely to change over time, as will the distribution of risks.

ADVANTAGES FOR FARMERS

The prime advantage of a contractual agreement for farmers is that the sponsor will normally undertake to purchase all produce grown, within specified quality and quantity parameters. Contracts can also provide farmers with access to a

³ In this publication the terms "sponsor" and "manager" are used more or less synonymously, unless clearly indicated otherwise. "Sponsor" is used in preference to "company" as many contract farming ventures are still operated by government controlled organizations.

⁴ Little, P.D. and Watts, M.J., eds., 1994.

⁵ Poulton, C., Dorward, A. and Kydd, J., 1997.

wide range of managerial, technical and extension services that otherwise may be unobtainable. Farmers can use the contract agreement as collateral to arrange credit with a commercial bank in order to fund inputs. Thus, the main potential advantages for farmers are:

- provision of inputs and production services;
- access to credit;
- introduction of appropriate technology;
- skill transfer;
- guaranteed and fixed pricing structures; and
- access to reliable markets.

Provision of inputs and production services

Many contractual arrangements involve considerable production support in addition to the supply of basic inputs such as seed and fertilizer. Sponsors may also provide land preparation, field cultivation and harvesting as well as free training and extension. This is primarily to ensure that proper crop husbandry practices are followed in order to achieve projected yields and required qualities. There is, however, a danger that such arrangements may lead to the farmer being little more than a labourer on his or her own land.

It is often difficult for small-scale farmers outside the contract-farming context to gain access to inputs. In Africa, in particular, fertilizer distribution arrangements have been disrupted by structural adjustment measures, with the private sector having yet to fill adequately the void created by the closure of parastatal agencies. In many countries a vicious circle has developed whereby the low demand for inputs provides no incentive for the development of commercial distribution networks and this, in turn, further adversely affects input availability and use. Contract farming can help to overcome many of these problems through bulk ordering by management.

Access to credit

The majority of smallholder producers experience difficulties in obtaining credit for production inputs. With the collapse or restructuring of many agricultural development banks and the closure of many export crop marketing

boards (particularly in Africa), which in the past supplied farmers with inputs on credit, difficulties have increased rather than decreased.

Contract farming usually allows farmers access to some form of credit to finance production inputs. In most cases it is the sponsors who advance credit through their managers. However, arrangements can be made with commercial banks or government agencies through crop liens that are guaranteed by the sponsor, i.e. the contract serves as collateral. When substantial investments are required of farmers, such as packing or grading sheds, tobacco barns or heavy machinery, banks will not normally advance credit without guarantees from the sponsor.

The tendency of certain farmers to abuse credit arrangements by selling crops to buyers other than the sponsor (extra-contractual marketing), or by diverting inputs supplied by management to other purposes, has caused some sponsors to reconsider supplying most inputs, opting instead to provide only seeds and essential agrochemicals. The policies and conditions that control advances are normally described in attachments to contracts (Annex I).

Introduction of appropriate technology

New techniques are often required to upgrade agricultural commodities for markets that demand high quality standards. New production techniques are often necessary to increase productivity as well as to ensure that the commodity meets market demands. However, small-scale farmers are frequently reluctant to adopt new technologies because of the possible risks and costs involved. They are more likely to accept new practices when they can rely on external resources for material and technological inputs. Nevertheless, the introduction of new technology will not be successful unless it is initiated within a well-managed and structured farming operation. Private agribusiness will usually offer technology more diligently than government agricultural extension services because it has a direct economic interest in improving farmers' production.⁶ Most of the larger sponsors prefer to provide their own extension rather than rely on government services.

⁶ Dicken, P., 1986: 363.

Box 1**Technology transfer by diffusion**

The South Nyanza Sugar Company (SONY) in Kenya places strong emphasis on field extension services to its 1 800 contracted farmers, at a ratio of one field officer to 65 sugar-cane growers. The extension staff's prime responsibilities are focused on the managerial skills required when new techniques are introduced to SONY's farmers. These include transplanting, spacing, fertilizer application, cultivation and harvesting practices. Also, SONY promotes farmer training programmes and organizes field days to demonstrate the latest sugar-cane production methods to farmers.

Skill transfer

The skills the farmer learns through contract farming may include record keeping, the efficient use of farm resources, improved methods of applying chemicals and fertilizers, a knowledge of the importance of quality and the characteristics and demands of export markets. Farmers can gain experience in carrying out field activities following a strict timetable imposed by the extension service. In addition, spillover effects from contract farming activities could lead to investment in market infrastructure and human capital, thus improving the productivity of other farm activities. Farmers often apply techniques introduced by management (ridging, fertilizing, transplanting, pest control, etc.) to other cash and subsistence crops.

Guaranteed and fixed pricing structures

The returns farmers receive for their crops on the open market depend on the prevailing market prices as well as on their ability to negotiate with buyers. This can create considerable uncertainty which, to a certain extent, contract farming can overcome. Frequently, sponsors indicate in advance the price(s) to be paid and these are specified in the agreement. On the other hand, some contracts are not based on fixed prices but are related to the market prices at

Box 2**Effect of assured markets – Tomato production in India**

Hindustan Lever issued contracts to 400 farmers in northern India to grow selected varieties of tomatoes for paste. A study of the project confirmed that production yields and farmers' incomes increased as a result of the use of hybrid seeds and the availability of an assured market. An analysis of the yields and incomes of the contracted farmers compared with farmers who grew tomatoes for the open market showed that yields of the farmers under contract were 64 percent higher than those outside the project.

the time of delivery. In these instances, the contracted farmer is clearly dependent on market volatility.

Access to reliable markets

Small-scale farmers are often constrained in what they can produce by limited marketing opportunities, which often makes diversification into new crops very difficult. Farmers will not cultivate unless they know they can sell their crop, and traders or processors will not invest in ventures unless they are assured that the required commodities can be consistently produced. Contract farming offers a potential solution to this situation by providing market guarantees to the farmers and assuring supply to the purchasers.

Even where there are existing outlets for the same crops, contract farming can offer significant advantages to farmers. They do not have to search for and negotiate with local and international buyers, and project sponsors usually organize transport for their crops, normally from the farmgate.

PROBLEMS FACED BY FARMERS

For farmers, the potential problems associated with contract farming include:

- increased risk;
- unsuitable technology and crop incompatibility;

- manipulation of quotas and quality specifications;
- corruption;
- domination by monopolies; and
- indebtedness and overreliance on advances.

These potential problems can usually be minimized by efficient management that consults frequently with farmers and closely monitors field operations (see Chapters 5 and 6).

Increased risk

Farmers entering new contract farming ventures should be prepared to balance the prospect of higher returns with the possibility of greater risk. Such risk is more likely when the agribusiness venture is introducing a new crop to the area. There may be production risks, particularly where prior field tests are inadequate, resulting in lower-than-expected yields for the farmers. Market risks may occur when the company's forecasts of market size or price levels are not accurate. Considerable problems can result if farmers perceive that the company is unwilling to share any of the risk, even if partly responsible for the losses. In Thailand, for example, a company that contracted farmers to rear chickens charged a levy on farmers' incomes in order to offset the possibility of a high chicken mortality rate. This was much resented by the farmers, as they believed that the poor quality of the day-old chicks supplied by the company was one reason for the problem.

Unsuitable technology and crop incompatibility

The introduction of a new crop to be grown under conditions rigorously controlled by the sponsor can cause disruption to the existing farming system. For example, the managers may identify land traditionally reserved for food crops as the most suitable for the contracted crop. Harvesting of the contracted crop may fall at the same time as the harvesting of food crops, thus causing competition for scarce labour resources. Particular problems may be experienced when contract farming is related to resettlement programmes. In Papua New Guinea, for example, people from the Highlands were resettled in coastal areas to grow oil palm and rubber. This required the farmers, who

were traditionally sweet potato eaters, to learn cultivation techniques for new food crops and to adapt their dietary practices accordingly.

Two factors should be considered before innovations are introduced to any agricultural environment. The first is the possible adverse effect on the social life of the community. When tobacco growers in Fiji were encouraged to cure tobacco themselves rather than sell it in the fresh green form, it was found that they were unable to handle the highly technical curing operation with any degree of continuity. This was attributed to intermittent social commitments and customary obligations that overrode contractual responsibilities and eventually resulted in the cancellation of their contracts.

The second factor is the practicality of introducing innovations or adaptations. The introduction of sophisticated machines (e.g. for transplanting) may result in a loss of local employment and overcapitalization of the contracted farmer. Furthermore, in field activities such as transplanting and weed control, mechanical methods often produce less effective results than do traditional cultivation methods. Field extension services must always ensure that the contracted crop fits in with the farmer's total cropping regime, particularly in the areas of pest control and field rotation practices.

Manipulation of quotas and quality specifications

Inefficient management can lead to production exceeding original targets. For example, failures of field staff to measure fields following transplanting can result in gross overplanting. Sponsors may have unrealistic expectations of the market for their product or the market may collapse unexpectedly owing to transport problems, civil unrest, change in government policy or the arrival of a competitor. Such occurrences can lead managers to reduce farmers' quotas. Few contracts specify penalties in such circumstances. In some situations management may be tempted to manipulate quality standards in order to reduce purchases while appearing to honour the contract. Such practices will cause sponsor-farmer confrontation, especially if farmers have no method to dispute grading irregularities. All contract farming ventures should have forums where farmers can raise concerns and grievances relating to such issues.

Corruption

Problems occur when staff responsible for issuing contracts and buying crops exploit their position. Such practices result in a collapse of trust and communication between the contracted parties and soon undermine any contract. Management needs to ensure that corruption in any form does not occur. On a larger scale, the sponsors can themselves be dishonest or corrupt. Governments have sometimes fallen victim to dubious or “fly-by-night” companies who have seen the opportunity for a quick profit. Techniques could include charging excessive fees to manage a government-owned venture or persuading the government and other investors to set up a new contract farming company and then sell that company overpriced and poor quality processing equipment. In such cases farmers who make investments in production and primary processing facilities run the risk of losing everything.

Domination by monopolies

The monopoly of a single crop by a sponsor can have a negative effect. Allowing only one purchaser encourages monopolistic tendencies, particularly where farmers are locked into a fairly sizeable investment, such as with tree crops, and cannot easily change to other crops. On the other hand, large-scale investments, such as for nucleus estates, often require a monopoly in order to be viable. In order to protect farmers when there is only a single buyer for one commodity, the government should have some role in determining the prices paid.

Drucker suggests that privately managed monopolies under public regulation are preferable to non-regulated private or public monopolies.⁷ The greatest abuses do tend to occur when there are public monopolies, where buying prices are set by the government, or where farmers have made long-term investments in perennial crops. In 1999 the Kenya Tea Development Authority experienced serious unrest amongst its growers, reportedly because of the Authority’s inefficient extension services and alleged “manipulation” of farmers. There was also discontent in Kenya among sugar farmers because the price set by the government did not change between 1997 and 1999.

⁷ Drucker, P., 1983: 97, 153-154.

Indebtedness and overreliance on advances

One of the major attractions of contract farming for farmers is the availability of credit provided either directly by the company or through a third party. However, farmers can face considerable indebtedness if they are confronted with production problems, if the company provides poor technical advice, if there are significant changes in market conditions, or if the company fails to honour the contract. This is of particular concern with long-term investments, either for tree crops or for on-farm processing facilities. If advances are uncontrolled, the indebtedness of farmers can increase to uneconomic levels. In one venture "compassionate" advances for school fees, weddings and even alimony resulted in many farmers receiving no payments at the end of the season. Dropout rates for farmers in that particular project were high, as they thought contract farming did not pay.

ADVANTAGES FOR SPONSORS

Companies and government agencies have a number of options to obtain raw materials for their processing and marketing activities. The benefits of contract farming are best examined in the light of the other alternatives, namely spot-market purchases and large-scale estates. The main potential advantages for sponsors can be seen as:

- political acceptability;
- overcoming land constraints;
- production reliability and shared risk;
- quality consistency; and
- promotion of farm inputs.

Political acceptability

It can be more politically expedient for a sponsor to involve smallholder farmers in production rather than to operate plantations. Many governments are reluctant to have large plantations and some are actively involved in closing down such estates and redistributing their land. Contract farming, particularly when the farmer is not a tenant of the sponsor, is less likely to be subject to political criticism. As a result of the restructuring of their economies, many African

governments have promoted contract farming as an alternative to private, corporate and state-owned plantations. In Zimbabwe, for example, contract farming is actively encouraged, particularly in the sugar-cane, tea and cotton industries.

In recent years many countries have seen a move away from the plantation system of production to one where smaller-scale farmers grow crops under contract for processing and/or marketing. In Central America, for example, multinational corporations have moved from banana plantation production to purchasing bananas grown by contracted farmers, with the corporations providing technical advice and marketing services. This trend is also found in the international tobacco industry; smallholder tobacco production through contract farming has replaced estates in several countries. Similar changes have occurred with other crops. In Kenya, the tea industry, originally founded on the plantation model, now provides extension services and inputs to tens of thousands of contracted farmers.

The decision to choose contract farming does not make a company totally immune from criticism. For example, the considerable opposition to the role of multinational corporations in India in the late 1990s had a negative effect on investment in contract farming by foreign agribusiness corporations.

Overcoming land constraints

Most of the world's plantations were established in the colonial era when land was relatively plentiful and the colonial powers had few scruples about either simply annexing it or paying landowners minimal compensation. That is, fortunately, no longer the situation. Most large tracts of suitable land are now either traditionally owned, costly to purchase or unavailable for commercial development. Moreover, even if it were possible for companies to purchase land at an affordable price, it would rarely be possible to purchase large enough parcels of land to offer the necessary economies of scale achieved by estate agriculture. Contract farming, therefore, offers access to crop production from land that would not otherwise be available to a company, with the additional advantage that it does not have to purchase it.

Although it may be considered that plantation agriculture on a large scale is generally more cost-effective than small-scale production, that is not always

the case. Estate production involves both direct labour costs and indirect costs of labour in terms of hiring, training and supervising. It is often necessary to provide accommodation and meals for estate workers. As noted above, land can be very expensive and difficult to obtain, thus contract farming can often be competitive, particularly for crops where large-scale economies of scale are difficult to achieve. As already noted, experience in some developing countries indicates that plantation models of crop production can evolve successfully into cost-effective smallholder contract farming ventures.

Production reliability and shared risk

The failure to supply agreed contracts could seriously jeopardize future sales. Plantation agriculture and contract farming both offer reasonable supply reliability. Sponsors of contract farming, even with the best management, always run the risk that farmers will fail to honour agreements. On the other hand, plantation agriculture always runs the risk of labour disputes. In the case of horticultural production some companies do prefer estate rather than contracted production. In Gambia and Ghana, for example, a number of crops are grown under the estate model, as are strawberries and flowers in Kenya.

Working with contracted farmers enables sponsors to share the risk of production failure due to poor weather, disease, etc. The farmer takes the risk of loss of production while the company absorbs losses associated with reduced or non-existent throughput for the processing facility. Where production problems are widespread and no fault of the farmers, sponsors will often defer repayment of production advances to the following season. The use of crop insurance may be possible, and this is discussed in Chapter 4.

Both estate and contract farming methods of obtaining raw materials are considerably more reliable than making purchases on the open market. The open market is rarely an acceptable option for organizations that have significant assets tied up in processing facilities and need to have guaranteed quantities of raw material to justify their investment. For example, it is hardly ever an acceptable option for companies who make regular shipments of horticultural produce to supermarkets and for export. Companies must ensure that crops are harvested and sold on a carefully scheduled and consistent basis: a factor that is normally assured under a well-directed contract farming scheme.

Quality consistency

Markets for fresh and processed agricultural produce require consistent quality standards. Moreover, these markets are moving increasingly to a situation where the supplier must also conform to regulatory controls regarding production techniques, particularly the use of pesticides. For fresh produce there is an growing requirement for “traceability”, i.e. suppliers to major markets increasingly need to be confident of identifying the source of production if problems related to food safety arise. Both estate and contracted crop production require close supervision to control and maintain product quality, especially when farmers are unfamiliar with new harvesting and grading methods. Often, large numbers of crops within a single project have to be transplanted, harvested and purchased in a uniform manner so as to achieve product consistency.

Distinct varieties of produce in the desired quality and quantities are often not available on the open market. For example, a multinational that invested in the Indian State of Punjab found that the local varieties of tomatoes were unsuitable for processing into paste or ketchup. This was one of the factors that made it decide to go into contract farming.

Agribusinesses producing for markets demanding high quality standards, such as fruits and vegetables for export, often find that small-scale farmers and their families are more likely to produce high-quality products than farmers who must supervise hired labour.⁸ Also contract farming makes quarantine controls more manageable. It is easier for quarantine authorities to inspect a limited number of exporters of a single commodity, who closely supervise farmers, than to inspect hundreds, or sometimes thousands, of individual producers selling through open markets. Much of the production of “organic” foods is being done on contract, as an integrated operation facilitates a clear crop identity from farmer to retailer. In some highly sophisticated operations, containers are now being loaded on the farm for direct delivery to the supermarket.

⁸ Glover, D. and Kusterer, K., 1990: 134.

Promotion of farm inputs

An example of an unusual but, nevertheless, interesting benefit for sponsors comes from the Philippines. A feed milling company experienced difficulties in marketing its feed, which was more expensive than that produced by competing companies. To solve this problem it developed rearing schemes for pigs and poultry under contract in order to provide a market outlet for its feeds and to demonstrate their performance to other farmers living near the contracted farmers.

PROBLEMS FACED BY SPONSORS

The main disadvantages faced by contract farming developers are:

- land availability constraints;
- social and cultural constraints;
- farmer discontent;
- extra-contractual marketing; and
- input diversion.

Land availability constraints

Farmers must have suitable land on which to cultivate their contracted crops. Problems can arise when farmers have minimal or no security of tenure as there is a danger of the sponsor's investment being wasted as a result of farmer-landlord disputes. Difficulties are also common when sponsors lease land to farmers. Such arrangements normally have eviction clauses included as part of the conditions. In Gambia, land rights are determined not only by gender but also by the historic manner of land use. When international donor organizations insisted on having a legal titleholder for contracted crops, resistance to giving women formal titles to land was shown by male household heads. The objection was based on the fear of permanent land alienation that could occur as the result of matrimonial disputes.⁹

Some contract farming ventures are dominated by customary land usage arrangements negotiated by landless farmers with traditional landowners. While

⁹ Shipton, P. in Watts, M.J., 1994: 57; Carney, J.A., 1994: 173-176; Little, P.D., 1994: 236.

such a situation allows the poorest cultivator to take part in contract farming ventures, discrete management measures need to be applied to ensure that landless farmers are not exploited by their landlords. Before entering into contracts, the sponsor must ensure that access to land is secured, at least for the term of the agreement.

Social and cultural constraints

Problems can arise when management chooses farmers who are unable to comply with strict timetables and regulations because of social obligations. Promoting agriculture through contracts is also a cultural issue. In communities where custom and tradition play an important role, difficulties may arise when farming innovations are introduced. Before introducing new cropping schedules, sponsors must consider the social attitudes and the traditional farming practices of the community and assess how a new crop could be introduced. Customary beliefs and religious issues are also important factors. For example, Easter for some Christians is an inappropriate time for sowing vegetable crops. Harvesting activities should not be programmed to take place during festivals, and failure to accommodate such traditions will result in negative farmer reaction. It must also be recognized that farmers require time to adjust to new practices.

Farmer discontent

A number of situations can lead to farmer dissatisfaction. Discriminatory buying, late payments, inefficient extension services, poor agronomic advice, unreliable transportation for crops, a mid-season change in pricing or management's rudeness to farmers will all normally generate dissent. If not readily addressed, such circumstances will cause hostility towards the sponsors that may result in farmers withdrawing from projects. This emphasizes the importance of good management to the success of contract farming. Ways in which management can avoid such problems are addressed in Chapter 5.

Extra-contractual marketing

The sale of produce by farmers to a third party, outside the conditions of a contract, can be a major problem. Extra-contractual sales are always possible

and are not easily controlled when an alternative market exists. For example, a farmer cooperative in Croatia bought cucumbers, red peppers and aubergines on contract. The cooperative's advances to the farmers included all necessary production inputs. Unfortunately members often sold their vegetables to traders at higher prices than the cooperative had contracted. The outside buyers offered cash to farmers as opposed to the prolonged and difficult collection of payments negotiated through the cooperative. Sponsors themselves can sometimes be a cause of extra-contractual practices. In Colombia, a company purchased passion fruit from a competitor's growers when production shortfalls occurred. A similar situation was also experienced in Indonesia where a number of sponsors competed for quality tobacco by surreptitious means. This led to a "tobacco war" between various sponsors that eventually forced the local provincial government to intervene.

In another case, a tobacco project diversified into off-season maize to provide farmers with additional income. In the first season some farmers sold their maize crops to traders for cash. Over 60 percent of the first season's maize crop was estimated to have been sold outside the agreement. The repayment of loans advanced for inputs was thereby circumvented, making the diversification venture uneconomical for the sponsor. The sponsor imposed strict penalties the following year as part of the maize registration formula. If the farmers were found to be selling their maize outside the agreement, their highly profitable tobacco agreement was cancelled.

Where there are several companies working with the same crop (e.g. cotton in some southern African countries), they could collaborate by establishing a register of contracted farmers.¹⁰ Managers must be aware of produce being sold outside the project and also be aware of produce from outside being channelled into the buying system. This occurs when non-contracted farmers take advantage of higher prices paid by an established sponsor. Non-contracted crops are filtered into the buying system by outside farmers through friends and family who have crop contracts. Such practices make it difficult for the sponsor to regulate production targets, chemical residues and other quality aspects.

¹⁰ Shepherd, A.W. and Farolfi, S., 1999: 75.

Input diversion

A frequent problem is that farmers are tempted to use inputs supplied under contract for purposes other than those for which they were intended. They may choose to use the inputs on their other cash and subsistence crops or even to sell them. Clearly this is not acceptable to the sponsor, as the contracted crop's yields will be reduced and the quality affected. Steps to overcome such problems include improved monitoring by extension staff, farmer training and the issuing of realistic quantities of inputs. However, the knowledge that a contract has the advantages of technical inputs, cash advances and a guaranteed market usually makes the majority of farmers conform to the agreement. Unless a project is very poorly managed, input diversion is usually an annoyance rather a serious problem.

Chapter 2

**Key preconditions
for successful contract farming**

No contract farming venture should be initiated unless some basic preconditions are met. This chapter reviews these preconditions under the headings of profitability, the physical and social environments and government support.

A PROFITABLE MARKET

The sponsor

- *Must have identified a market for the planned production*
- *Must be sure that such a market can be supplied profitably on a long-term basis*

The farmer

- *Must find potential returns more attractive than returns from alternative activities and must find the level of risk acceptable*
- *Must have potential returns demonstrated on the basis of realistic yield estimates*

THE PHYSICAL AND SOCIAL ENVIRONMENTS

Main factors

- *The physical environment must be suitable in general, and in particular for the product to be produced*

- **Utilities and communications** must be suitable for both farming, e.g. feeder roads, and for agro-processing, e.g. water and electricity
- **Land availability and tenure** – contracted farmers require unrestricted access to the land they farm
- **Input availability** – sources of inputs need to be assured
- **Social considerations** – cultural attitudes and practices should not conflict with farmers' obligations under the contract and managers must develop a full understanding of local practices

GOVERNMENT SUPPORT

The enabling and regulatory role

- Suitable laws of contract and other laws are required as well as an efficient legal system
- Governments need to be aware of the possible unintended consequences of regulations and should avoid the tendency to overregulate
- Governments should provide services such as research and, sometimes, extension

The developmental role

- Governments can take steps to bring together agribusiness and suitable farmers

Introduction

The primary precondition for any investment in contract farming must be that it is likely to be profitable. Having identified a potentially profitable market the sponsor can then move on to assess whether that market can be profitably supplied by contracted farmers in a particular location of a particular country. This involves an assessment of the social and physical environment of the proposed contract area as well as the potential support likely to be provided by the government. The following sections therefore consider preconditions under the headings of:

- a profitable market;
- the physical and social environments;
- government support.

A PROFITABLE MARKET

Profit for the sponsor

The sponsor's decision to invest in a particular market must be based initially on the knowledge that, subject to certain conditions, it will be profitable. However, contract farming is then just one of a number of solutions to a commercial market opportunity. A market must have the capacity to remain profitable in the longer term. In the case of tree crops, for example, prices tend to be cyclical. An analysis of economic viability carried out when prices are high would produce very different results than those obtained at the bottom of the price curve. A "sensitivity analysis" is thus required to ensure that production can be carried out profitably even when prices are low.

The exporting of horticultural produce to the markets of Western Europe, Japan and the United States is very competitive. Subject to guarantees regarding quality and supply, importers purchase produce on the basis of price. A supplier, through contact farming or otherwise, can lose markets overnight if quality standards and deliveries become unpredictable and inconsistent. Companies considering high-value horticultural exports also need to be certain that they can meet existing quality standards and likely future requirements. For example, if importers started to demand "organic" produce, how easily would suppliers and farmers adapt?

Profit for the farmer

If either the sponsors or their contracted farmers fail to achieve consistent and attractive financial benefits a venture will collapse. A further precondition, therefore, is that the sponsor needs to be sure that farmers will obtain higher net incomes from entering into a contract than they could from alternative activities with the same, or less, risk. Sponsors should calculate realistic yields in order to forecast whether production by farmers can be profitable at prices the sponsors are able to pay. These estimates should be based on the experience of farmers in the chosen area, their historical production data, soil fertility and, sometimes, field trials. Once estimates are compiled and production costs known, the sponsors are in a sounder position to calculate a realistic pricing structure that is mutually profitable. Guaranteed, regular and attractive incomes should encourage farmers to make a long-term commitment.

Sponsors should be aware that yield results from research plots are normally far higher than results from farmers' fields. Agronomists in Indonesia noted that soybeans grown at research stations produced yields more than twice those achieved by small-scale farmers.¹¹ Experienced managers of contract farming projects usually estimate yields based on the mean production over the previous three to five years. As new technologies are introduced and farm management improves the mean yield increases over time. When a new crop is introduced the yield estimates are based on historic knowledge of the crop grown in similar environments and on the results of field trials.

THE PHYSICAL AND SOCIAL ENVIRONMENTS

The main factors affecting the success of all agribusiness ventures are:

- the physical environment;
- utilities and communications;
- land availability and tenure;
- input availability;
- social considerations.

¹¹ Roling, N. in Beets, W., 1990: 256.

The physical environment

The success of any agricultural investment requires that two multidimensional preconditions be met. Firstly, the general suitability of the topography, climate, soil fertility and water availability. Secondly, the suitability of the physical environment for the specific plant genotype or animal for which there is a market demand. The extent to which all these factors interact determines production yields, quality and profitability.

Utilities and communications

A major precondition for agricultural investment in rural areas is the existence of an adequate communication system that includes roads, transport, telephones and other telecommunication services. Reliable power and water supplies are particularly vital for agro-processing and exporting of fresh produce. The availability of suitable educational and medical services is also important for those who participate in contract farming, whether they be direct employees of the sponsor or the farmers themselves.

Sponsors will need to be assured that farm produce can be easily transported and that inputs can be delivered to their farmers. While major road infrastructure may be adequate, approach (or feeder) roads to farms may not. This is particularly important in the case of perishable crops that need to be processed soon after harvest (e.g. tea, oil palm and sugar) or stored in a suitable environment (e.g. cut flowers). Where local transport access is inadequate, sponsors must decide whether the problems can be resolved or whether alternate areas should be selected. Sometimes farmer groups are given the responsibility for ensuring that company transporters can reach the fields. Before the start of any project, the sponsor, farmers and local government agencies must agree on who will ensure access to and maintain feeder roads. In Kenya, the sugar companies' agreement with farmers stipulated that the companies had the right to construct feeder roads on the farmers' lands. This inevitably caused resentment among the landowners.

A precondition for the export of horticultural crops under contract is the availability of regular airfreight schedules; fresh vegetables and cut flowers depend on adequate cargo space to international markets. Unless quantities are large enough to justify chartering planes, the exporters will be dependent

Box 3**Analysing the physical and social environment**

An example of an investigation into the physical and social environment comes from Bali where an Indonesian corporation planned to grow tobacco under contract. Following a comprehensive survey of the factors listed above, it was recommended that the project be restricted to only two of a regency's (province's) seven subdistricts. This decision was based on the following analysis.

Government support:

- Enthusiastic encouragement by the regency's leaders and the local agriculture department.
- Adequate road and communications networks.
- Two long-established irrigation systems – a traditional system maintained by the farmers, and a more sophisticated system constructed and supervised by the regency.

General conditions:

- A responsive and progressive farming community that expressed a strong desire to cultivate the crops and enter into contracts with the sponsor.
- Suitable friable loamy soils with the desired level of soil acidity.
- A sufficient altitude that provided the preferred temperature range.
- Minimal competition from the production of high-value, tourist-orientated crops such as those grown in other subdistricts.
- Little evidence of the mosaic viruses that infect tobacco.
- Farmers having adequate access to land, either as owners or as lessees.

on space being available on commercial flights. The number of commercial flights depends on the number of passengers wanting to fly, and this can fluctuate rapidly. Several countries that have experienced coups or social disturbances have seen their tourism industries collapse overnight. This, in turn, has led to flight cancellations and the loss of markets for the exporters.

Land availability and tenure

Contract farming can involve a wide diversity of land ownership and tenure arrangements. Farmers under contract must have unrestricted access to land on which to plant their crops. There must be an awareness and understanding on the part of management of how farmers gain access to land for cultivation and for that access to be acceptable within the framework of the contract.

In the majority of projects, sponsors contract directly with farmers who either own land or have customary land rights within a communal landowning system. However, within a single project there can be numerous variations of land tenure, including freehold title, formal lease of state land, leases from the sponsor's own estate and informal seasonal arrangements with landlords. Even if tenure is on an extralegal, customary and seasonal basis, short-term contracted crops such as maize, tobacco and all table vegetables can often be accommodated.

Despite the occasionally flexible nature of customary land tenure, the dominant factor now controlling land tenure under contract farming is the rent demanded by the landowner. In one venture land rents were dependent on the whim of the respective landlords. This resulted in a wide variation of charges, influenced by the nature of individual farmer-landlord relationships. Some of the land rents were relatively low, many reasonable and some grossly inflated. In such cases interventions by sponsors may be necessary to negotiate standard rents on behalf of all farmers.

Input availability

In most contract farming ventures the sponsors recommend, procure and distribute many or all of the material inputs. Sponsors need to be assured that they will be able to organize the supply of all necessary inputs for the farmers and for their own processing needs. All inputs should be identified and ordered

well in advance, either from local sources or from overseas. Contract farming ventures call for varying levels of inputs depending on the nature of the crop and the degree of the farmers' sophistication. For crops such as Virginia flue-cured tobacco, farmers require a multitude of structural and material inputs that include curing barns, grading sheds, fuel, fertilizer, imported seed, pesticides and cultivation advances. Failure to have ready access to these can cause serious disruption to the production chain and can result in serious financial losses for all parties. Similarly, the failure of managers to supply feed on time to poultry and pig rearers can have major consequences for the farmers.

Social considerations

Many rural communities are wary of modern agribusiness and strongly influenced by traditional practices. Conventional societies are normally more conservative in their ambitions and material needs. There are often great disparities in cultural attitudes towards work. Before beginning a venture, managers need to develop an understanding of the cultural attitudes of those with whom they are working. They must also be particularly aware of the possibility of disputes when there is more than one cultural group working on the contract.

There is always the possibility that the economic success of a contract farming venture could, in fact, have social repercussions that jeopardize its long-term success. This may occur, for example, because the opportunity to participate is

Box 4

Culture versus commercialism

The Dusan ethnic community of Sabah has a custom that, in the event of death, no person is permitted to visit the deceased's fields or gardens for a specific period. This is known as *maganakan* and the Dusan believe that if visitors set foot on the farm of the deceased all crops will die. Extension staff of a contract farming project in central Sabah were threatened with violence and legal action for transgressing this taboo.

limited to a certain number of farmers. If farmers are chosen on the basis of the size of their farms and resources, contract farming may widen pre-existing economic disparities and lead to resentment on the part of those excluded. In India there is concern that contract farming has led to a reversal of previous tenancy arrangements, with small-scale farmers now renting out land to large-scale farmers who have contracts.

GOVERNMENT SUPPORT

Governments have to play an important role if contract farming is to be successful. A relevant legal framework and an efficient legal system are preconditions. Moreover, governments can do much to foster success by developing linkages between investors and farmers and can play an important role in protecting farmers by ensuring the financial and managerial reliability of potential sponsors. The role of national governments and their local agencies can be divided into:

- the enabling and regulatory role; and
- the developmental role.

The enabling and regulatory role

Contract farming depends on either legal or informal agreements between the contracting parties (Chapter 4). These, in turn, have to be backed up by appropriate laws and an efficient legal system. Relevant laws can be grouped into three categories: enabling functions, economic regulatory functions and constraining functions.¹² In the context of contract farming the enabling aspect of the law is perhaps the most important. Laws of contract, in particular, allow the evolution of commercial transactions beyond direct barter exchanges. Legal mechanisms for granting a group of individuals recognition as a legal entity have also been central to the development of commerce. A classic example is the limited-liability company. However, in the context of contract farming, a

¹² FAO, 1999.

sponsor entering into agreement with a cooperative also needs to be assured that the cooperative is on a sound legal footing.

Governments need to be aware of the implications of all laws and policy decisions on agribusiness development and how those policies influence contract farming. In the Philippines, for example, fast-food chains had been importing frozen french fries. Although that particular variety of potato could be grown in the Philippines, the Government had imposed import restrictions on seed potatoes, resulting in the unavailability of the required variety. Approaches to the Government by the companies eventually resulted in the ban being lifted and this permitted the establishment of two contract farming ventures to supply the rapidly growing fast-food industry. Thus a simple policy reform ultimately benefited the sponsors and a large number of small-scale farmers.¹³

While it may not be considered a precondition it is desirable that governments play an arbitration or dispute resolution role. For example, the Government of Malawi established dispute resolution guidelines for agricultural contracts and offered the services of the Ministry of Labour to mediate. Likewise, in many large-scale, sugar-producing countries there are statutory bodies that act as arbitrators between sugar-cane growers and the sugar mills. In Canada, thousands of potato growers under contract with a single buyer negotiate prices and contract terms through the offices of the New Brunswick Potato Agency.¹⁴ It is compulsory that all potato farmers join the Agency.

Other government enabling activities to sustain contract farming may include:

- Provision for training in technological and managerial skills at all levels, if sponsors do not provide those services.
- Initiation and facilitation of research studies into the product under contract, in collaboration and consultation with the sponsors. State research institutes can particularly benefit smaller ventures, especially those managed by

¹³ Panganiban, D.F., 1996:19-20.

¹⁴ Glover, D. and Kusterer, K., 1990: 89.

individual developers who cannot sustain their own plant breeding programmes, etc.

- Provision of agricultural extension services to ventures that do not employ their own field staff. Small-scale developers cannot afford the luxury of their own extension service and thus need to make use of government services.

At the national level, it is a precondition that specialized services are available to provide institutional support to production, processing and marketing. Government services, such as quarantine controls, plant pathology clinics and research stations are important for contract farming. Such services are particularly necessary for companies that invest in high-value crops for export or in organic farming.

In most countries there is no legislation that specifically regulates contract farming. If legislation is introduced it should ideally be based on the industry's ability to regulate itself. However, governments have sometimes attempted to overregulate. This is often done when the sponsor is a parastatal or other government agency. For example, legislation in Kenya authorized the parastatal sponsor of contract tea farming to issue licences to farmers on rigid conditions. These governed aspects such as authority to uproot tea bushes, pest and disease controls, unauthorized planting of tea, failure to cultivate in the approved manner, and the right of the parastatal to grant or refuse a licence to plant tea. Although regulations such as these may have done the opposite, it can be argued that governments should enact legislation to protect farmers as the weaker of the contracting parties. This is particularly the case where the farmers involved are tenants of the sponsors and have little security.

Businessmen, particularly those involved with exports, frequently complain about the red tape and the costs involved with complying with excessive bureaucratic regulations and procedures. A simplification of official documentation, for example, could have a positive impact on the outlook of potential investors.

The developmental role

As contract farming grows in importance governments should perhaps reallocate development resources towards its promotion. For example, the Philippines Government, with assistance from an FAO project, promoted contract farming for small-scale farmers who were allocated land under the agrarian reform programme. A major feature of this was a "market matching" exercise. This involved organizing forums where agribusiness entrepreneurs could meet farmers' representatives to discuss their requirements. The forums were followed by more detailed discussions between individual sponsors and individual cooperatives or farmer organizations. By 2000 at least 27 companies had established contractual relationships with farmers as a result of the programme. Other activities carried out by the Department of Agrarian Reform included dissemination of market information, highlighting the products for which there was a commercial demand that could be satisfied through contract farming operations. The Department also agreed to act as arbitrator in the case of disputes.¹⁵

Another example of promotion of contract farming comes from India where the regional office of a government-owned bank organized a meeting of bankers, agribusiness executives and the government extension service in order to explore possibilities of creating market linkages for agricultural products. This led to a major poultry producer contracting 2 200 farmers in 164 villages to grow maize and soybeans for feed purposes. Finance is provided by the banks, with a tripartite agreement being signed by farmers, the company and the banks.¹⁶

Where contracted farmers are organized into cooperatives or groups, governments can play an important role by carrying out activities to strengthen the managerial skills of these organizations. Although the performance of agricultural cooperatives in developing countries has been marginal at best, improving a cooperative's managerial capability should, in theory, greatly enhance its business performance, the transfer of technology to farmers and its marketing skills.

¹⁵ SARC-TSARRD, 1998.

¹⁶ NABARD, 1999: 56.

The government has a role to play in ensuring that companies proposing to invest in contract farming are *bona fide* and are planning long-term partnership arrangements with farmers, rather than short-term operations which may leave farmers with considerable debts. Sponsors must have demonstrated financial strength, proven managerial competence and technological experience. Before promoting and launching projects, sponsors should create a suitable management and administrative structure and the purchase or lease of land for offices, processing facilities and transport needs should be organized in advance. Some projects may involve considerable capital investment and elaborate infrastructure such as that required for sugar milling, tobacco processing and vegetable canning.

INVENTORIES OF PRECONDITIONS

Tables 1a and 1b show theoretical examples of an inventory of preconditions that sponsors need to carry out before negotiating with farmers. Table 1a indicates a socio-political climate that is positive for contract farming. Of particular importance is the favourable response from local community leaders. The inventory as presented in Table 1b shows that key physical determinants of productivity, evidence of past farmer productivity and proven market demand make the venture attractive. In addition, suitable temperatures, adequate sunshine and a reliable irrigation system provide other advantages. While there is concern in the example that some farmers do not have permanent land tenancy, the majority of farmers have either outright ownership or long-term leases which are positive advantages for the stability of a contract.

Table 1a

**Example of an inventory of preconditions for contract farming
– Socio-political assessment**

COMPONENT	RATING			REMARKS
	F	A	M	
Political environment				
National		●		National political stability. Stated support for project.
Regional-district		●		Modest support for project.
Village-community	●			Positive response from local community leaders.
Public utilities & services				
Roads		●		Well maintained but limited road network.
Public transport			●	Sponsor provides project transportation.
Telephones			●	Poor. Project to provide own communications.
Electricity supply for processing	●			On national grid.
Water supply		●		Adequate for project.
Hospitals & health		●		One hospital and two health clinics.
Schools	●			One high school and three primary schools.
Government agencies		●		Positive response from research and extension sections.
Quarantine services	●			Good location and well administered.

F = Favourable

A = Adequate

M = Marginal

Table 1b

**Example of an inventory of preconditions for contract farming
– Physical and social assessment**

COMPONENT	RATING			REMARKS
	F	A	M	
Market Identification				
Manufactured product	●			Proven demand for manufactured product.
Fresh produce		●		Adequate demand for secondary grades in fresh form.
Physical environment				
General climatic factors		●		Adequate, no frosts in season, 80% sunlight hours.
Rainfall			●	Erratic and unreliable.
Natural water availability	●			Adequate for crop requirements.
Irrigation availability	●			Favourable irrigation system for project.
Soil fertility	●			Soils very suitable for crop.
Topography		●		Only a small percentage of farms have steep eroded slopes.
Natural vegetation	●			No effect on natural vegetation and proposed crop.
Social and farming environment				
Existing cropping mix		●		Practice of interrow and relay planting.
Historic productivity	●			Very productive farming community.
Cultural influences	●			Cultural obligations no obstruction to project.
Land tenure				
Landowning farmers	●			58% of farmers cultivate their own land.
Tenancy farmers		●		32% of farmers on long-term leases.
Customary farmers			●	10% of farmers growing on temporary customary tenure.

F = Favourable

A = Adequate

M = Marginal

Chapter 3

Types of contract farming

Contract farming usually follows one of five broad models, depending on the product, the resources of the sponsor and the intensity of the relationship between farmer and sponsor that is necessary.

The centralized model

- *Involves a centralized processor and/or packer buying from a large number of small farmers*
- *Is used for tree crops, annual crops, poultry, dairy. Products often require a high degree of processing, such as tea or vegetables for canning or freezing*
- *Is vertically coordinated, with quota allocation and tight quality control*
- *Sponsors' involvement in production varies from minimal input provision to the opposite extreme where the sponsor takes control of most production aspects*

The nucleus estate model

- *Is a variation of the centralized model where the sponsor also manages a central estate or plantation*
- *The central estate is usually used to guarantee throughput for the processing plant but is sometimes used only for research or breeding purposes*
- *Is often used with resettlement or transmigration schemes*

- *Involves a significant provision of material and management inputs*

The multipartite model

- *May involve a variety of organizations, frequently including statutory bodies*
- *Can develop from the centralized or nucleus estate models, e.g. through the organization of farmers into cooperatives or the involvement of a financial institution*

The informal model

- *Is characterized by individual entrepreneurs or small companies*
- *Involves informal production contracts, usually on a seasonal basis*
- *Often requires government support services such as research and extension*
- *Involves greater risk of extra-contractual marketing*

The intermediary model

- *Involves sponsor in subcontracting linkages with farmers to intermediaries*
- *There is a danger that the sponsor loses control of production and quality as well as prices received by farmers*

Introduction

Multinational corporations, smaller private companies, parastatals, individual entrepreneurs and, in some cases, farmer cooperatives can all act as sponsors and financial investors for contract farming activities. In nearly all instances, the sponsors are also responsible for management of the venture.

Contract farming can be structured in a variety of ways depending on the crop, the objectives and resources of the sponsor and the experience of the farmers. Contracting out production is a commercial decision to facilitate an adequate supply within a designated period and at an economic price. Any crop or livestock product can theoretically be contracted out using any of the models; however, certain products favour specific approaches. Broadly speaking, contract farming arrangements fall into one of five models:

1. *The centralized model.*
2. *The nucleus estate model.*
3. *The multipartite model.*
4. *The informal model.*
5. *The intermediary model.*

Decisions by sponsors on the type of model to follow should be made on the basis of market demand, production and processing requirements and the economic and social viability of plantation versus smallholder production. Where market requirements necessitate frequent changes to the farm technology with fairly intensive farm-level support from the sponsor, the permanent organization and maintenance of a production chain under a centralized model is vital. Organizations that require stringent processing standards rely largely on the centralized model. For crops such as tea, sugar and oil palm, with which farmers may have had little or no experience, sponsors are more likely to follow, where possible, the nucleus estate approach. Such crops require a significant long-term investment and, generally, immediate processing after harvest. However, the lack of adequate land or political opposition to estate development may dictate a centralized rather than nucleus estate approach. Where quality control is not the predominant concern, the informal model

may suffice. In some examples, sponsors use third parties or intermediaries to subcontract production out to farmers.

If the sponsor considers that a field trial is warranted prior to the introduction of a crop to farmers or that a guaranteed minimum throughput is required for the processing facility, a nucleus estate model is often most appropriate. Where capital investment in processing facilities is considerable and the number of contract farmers is high, either the centralized or the nucleus estate structures can be used, accompanied by strong managerial inputs and backed by formal contracts. The informal model, which may become more widespread in the future, is characterized by seasonal, short-term crops with only minimal material support to farmers.

Often, the operational structure of projects changes over time. For example, the distinctions between the centralized model and the informal model are sometimes blurred. Successful individual informal developers may expand their operations into activities that eventually evolve into the centralized category. One successful small-scale developer in Indonesia started a small operation in 1970 with a few greenhouses. By 1996 the company had grown into a \$US6.4 million business supplying fresh vegetables to local supermarkets and frozen vegetables for export, with the produce originating from hundreds of contracted farmers.

THE CENTRALIZED MODEL

This is a vertically coordinated model where the sponsor purchases the crop from farmers and processes or packages and markets the product (Figure 2). Except in a limited number of cases, farmer quotas are normally distributed at the beginning of each growing season and quality is tightly controlled. A sponsor may purchase from tens of thousands of small-scale farmers within a single project. The centralized scheme is generally associated with tobacco, cotton, sugar cane and bananas and with tree crops such as coffee, tea, cocoa and rubber, but can also be used for poultry, pork and dairy production. Where fresh vegetables and fruits are grown under contract, the term "processing" may include grading, sorting and packaging as well as the provision of cool storage facilities.

In Africa, the contracting out of crops to farmers under centralized structures is common. These are often called “outgrower” schemes. For example, in Zambia the multinational corporation, Lonhro, considered the system preferable to growing cotton on a plantation basis. In the late 1980s it initiated a smallholder project where over 15 000 farmers grew cotton under contract for the company’s ginnery.¹⁷

Box 5**Sugar-cane production by contract farming in Thailand**

Contract farming under the centralized processing and marketing model is common throughout the Thai sugar industry. Forty-six individually owned sugar mills in the country produced 4 080 000 tonnes of sugar in the 1997/1998 season, of which 57 percent was exported. Over 200 000 farmers grow sugar cane for these mills, on approximately 914 000 hectares. There are also many farmers who grow crops for large-scale farmers through agreements with intermediaries. In theory, the Thai Government closely regulates prices, issues quotas and monitors the operations of the private sugar-milling companies. The Government has introduced a net revenue sharing system under which growers receive 70 percent and the millers 30 percent of total net revenue. The Government also promotes and manages technical research centres and encourages growers’ associations.¹⁸

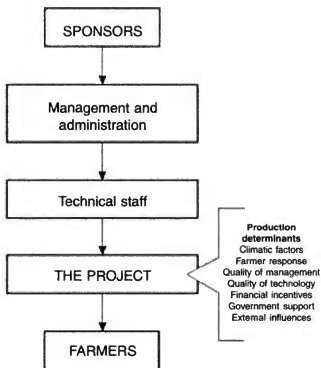
The level of involvement of the sponsor in production can vary from a minimum where, perhaps, only the correct type of seed is provided, to the opposite extreme where the company provides land preparation, seedlings, agrochemicals and even harvesting services. The extent of the sponsor’s involvement in production is rarely fixed and may depend on its requirements at a particular time or its financial circumstances. In India, a tomato processing

¹⁷ Springfellow, R., 1996: 8.

¹⁸ CSI, 1999: 6-19, 32, 55.

factory in the Punjab was transferred in 1997 from one multinational company to another. The previous owners had supplied seed, supervised production and harvesting operations and provided technical advice when needed, but the new owners only provided seeds. In the Philippines, a vegetable canning company operating close to Manila decided to cease advancing fertilizer and chemicals to its contract farmers because these were being diverted to other crops and farmers were also making extra-contractual sales. The company changed to a policy of supplying only seeds unless it was convinced of the farmer's honesty.

Figure 2
The centralized model



THE NUCLEUS ESTATE MODEL

Nucleus estates are a variation of the centralized model. In this case the sponsor of the project also owns and manages an estate plantation, which is usually close to the processing plant. The estate is often fairly large in order to provide some guarantee of throughput for the plant, but on occasion it can be relatively small, primarily serving as a trial and demonstration farm. The British-based Commonwealth Development Corporation (CDC) was a pioneer of the nucleus estate model although it no longer develops such estates. A common approach is for the sponsors to commence with a pilot estate then, after a trial period, introduce to farmers (sometimes called "satellite" growers) the technology and management techniques of the particular crop. Nucleus estates have often been used in connection with resettlement or transmigration schemes, such as in Indonesia and Papua New Guinea, for oil palm and other crops. While mainly used for tree crops, there are examples of the nucleus estate concept with other products. Indonesia, for example, has seen the operation of dairy nucleus estates, with the central estate being primarily used for the rearing of "parent stock".

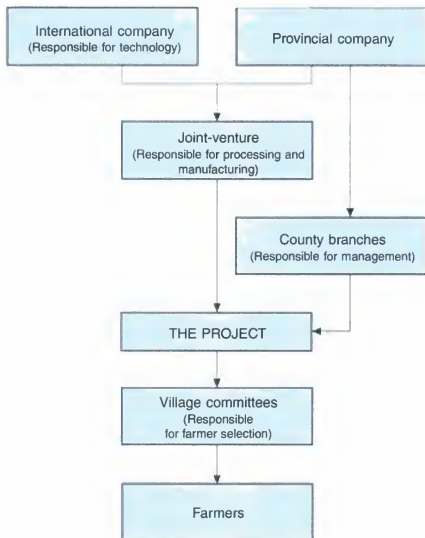
THE MULTIPARTITE MODEL

The multipartite model usually involves statutory bodies and private companies jointly participating with farmers. Multipartite contract farming may have separate organizations responsible for credit provision, production, management, processing and marketing. In Mexico, Kenya, and West Africa, among other countries, governments have actively invested in contract farming through joint ventures with the private sector.¹⁹ Multipartite structures are common in China where government departments as well as township committees and, at times, foreign companies have jointly entered into contracts with village committees and, since the early 1980s, individual farmers.

Figure 3 outlines a multipartite project in China. In this particular case, the county branches, through their agronomists and field technicians, were responsible for implementing and maintaining the terms and specifications of the agreement. There were formal contracts between the joint venture and the

¹⁹ Little, P.D. and Watts, M.J., eds., 1994: 8.

Figure 3

The multipartite model**– A joint-venture contract farming project in China**

branches, and written contracts between the counties and the village committees, but only a verbal understanding between farmers and their respective committees. In theory, farmers were expected to carry out cultivation as specified by the joint venture. In practice, however, county officials only followed instructions from the joint venture if to do so was in the county branch's immediate economic interest, irrespective of quality standards and long-term production objectives. The lack of coordination between the joint venture and the county management, village cadres and farmers eventually resulted in the collapse of the venture.

In Colombia, a company started buying passion fruit in 1987, using the centralized model. The company ran into difficulties, however, because it proved impossible to control extra-contractual marketing. It therefore developed a multipartite model in which all farmers were expected to belong to associations or cooperatives, and public institutions became involved as providers of credit and extension. This arrangement significantly reduced both the risk of extra-contractual marketing and the company's costs of dealing with individual farmers, while being generally welcomed by farmers. Problems remained, however, most notably in relation to the lack of management skills on the part of the farmer associations and cooperatives.

THE INFORMAL MODEL

This model applies to individual entrepreneurs or small companies who normally make simple, informal production contracts with farmers on a seasonal basis, particularly for crops such as fresh vegetables, watermelons and tropical fruits. Crops usually require only a minimal amount of processing. Material inputs are often restricted to the provision of seeds and basic fertilizers, with technical advice limited to grading and quality control matters.

A common example of the informal model is where the sponsor, after purchasing the crop, simply grades and packages it for resale to the retail trade. Supermarkets frequently purchase fresh produce through individual developers and, in some cases, directly from farmers. Financial investment by such developers is usually minimal. This is the most transient and speculative of all contract farming models, with a risk of default by both the promoter and the farmer. Nevertheless, in many developing countries such developers are

Box 6

Individual developers – The informal model

1. In the early 1990s firms in Sri Lanka were encouraged by the Government to participate in the production of gherkins. Under "production contracts" companies provided material and agronomic inputs, particularly advice on postharvest and packing practices, to over 15 000 rural households. The production of gherkins, grown in individual plots of around 0.1 hectare, rose dramatically from nothing in the late 1980s to 12 000 tonnes, valued at \$US7 million, in 1993. Because some of the firms were not agriculturally orientated, they used the services of local "agents" to organize and manage the farmers' crops.²⁰
2. In the South Pacific there has been a history of individual expatriate and local entrepreneurs who organized farmers to grow bananas, squash and papaya for export. In virtually all cases farmers worked under verbal contracts and were given free seed and basic technical advice, but little else in the form of material inputs. The success and durability of these developers has been marginal.
3. In the northern provinces of Thailand farmers grow chrysanthemums and fresh vegetables for the Chiangmai and Bangkok markets, under verbal agreements with individual developers. No technical inputs are provided but in most cases the developers advance credit for seed, fertilizer and plastic sheeting. All agronomic advice to farmers is given by government agencies that also organize training courses for the growers. Farmers expressed a preference for growing chrysanthemums as this was more profitable and they thought there was also less risk that the developer would abscond, as had happened in the fresh vegetable trade.

²⁰ Dunham, D., 1995.

long established and in numerous cases they have proved an alternative to the corporate or state agency approach. Three examples of the informal model are presented in Box 6.

The success of informal initiatives depends on the availability of supporting services, which, in most cases, are likely to be provided by government agencies. For example, while companies following the centralized model will probably employ their own extension staff, individual developers usually have to depend on government extension services. In addition, individual developers often have limited funds to finance inputs for farmers and therefore may have to develop arrangements whereby financial institutions provide loans to farmers against the security of an agreement with the developer (an informal multipartite arrangement). Furthermore, while nucleus estates and centralized developers frequently purchase products for which there is no other market (oil palm, tea and sugar, which depend on the availability of nearby processing facilities, or fruits and vegetables for export), individual developers often purchase crops for which there are numerous other market outlets. It is therefore important that agreements reached between the developers and farmers are backed up by law even if, in many countries, the slowness and inefficiency of the legal system make the threat of legal action over small sums a rather empty one.

In some parts of the world traders, who may not own processing or packaging facilities themselves, purchase crops for onwards sale to processors and packers. In some cases such traders provide seeds and fertilizer to the farmers with whom they deal. These are usually very informal arrangements with a high risk of default by farmers. However, in many countries, particularly in Africa, liberalization of the export market sector has led to a breakdown of input supply arrangements in recent years and further development of such informal contractual arrangements would thus appear to merit encouragement.²¹

THE INTERMEDIARY MODEL

Throughout Southeast Asia the formal subcontracting of crops to intermediaries is a common practice. In Thailand, for example, large food processing companies and fresh vegetable entrepreneurs purchase crops from individual

²¹ Shepherd, A.W. and Farolfi, S., 1999: 74-75.

“collectors” or from farmer committees, who have their own informal arrangements with farmers. In Indonesia, this practice is widespread and is termed *plasma*.

The use of intermediaries must always be approached with caution because of the danger of sponsors losing control over production and over prices paid to farmers by middlemen. In addition, the technical policies and management inputs of the sponsors can become diluted and production data distorted. In short, subcontracting disconnects the direct link between the sponsor and farmer. This can result in lower income for the farmer, poorer quality standards and irregular production.

Box 7

Intermediaries in Thailand

In the snap-frozen vegetable industry in Northern Thailand, two companies directly contract out to middlemen, or “collectors”, who organize over 30 000 farmers to grow soybeans, green beans and baby corn, primarily for the Japanese market. Each collector normally controls and supervises from 200 to 250 farmers.

Collectors are responsible for all field activities from sowing to harvesting. They are paid a commission based on the total production of the farmers they supervise. The sponsors’ agronomists dictate the varieties and fertilizer to be used as well as the sowing programmes and crop husbandry methods. The companies also employ field officers to provide technical support to the collectors and their subcontracted farmers.

Table 2
Characteristics of contract farming structures

STRUCTURE – MODEL	SPONSORS	GENERAL CHARACTERISTICS
Centralized	Private corporate sector State development agencies	Directed contract farming. Popular in many developing countries for high-value crops. Commitment to provide material and management inputs to farmers.
Nucleus estate	State development agencies Private/public plantations Private corporate sector	Directed contract farming. Recommended for tree crops, e.g. oil palm, where technical transfer through demonstration is required. Popular for resettlement schemes. Commitment to provide material and management inputs to farmers.
Multipartite	Sponsorship by various organizations, e.g. <ul style="list-style-type: none"> • State development agencies • State marketing authorities • Private corporate sector • Landowners • Farmer cooperatives 	Common joint-venture approach. Unless excellent coordination between sponsors, internal management difficulties likely. Usually, contract commitment to provide material and management inputs to farmers.
Informal developer	Entrepreneurs Small companies Farmer cooperatives	Not usually directed farming. Common for short-term crops; i.e. fresh vegetables to wholesalers or supermarkets. Normally minimal processing and few inputs to farmers. Contracts on an informal registration or verbal basis. Transitory in nature.
Intermediary (tripartite)	Private corporate sector State development agencies	Sponsors are usually from the private sector. Sponsor control of material and technical inputs varies widely. At time sponsors are unaware of the practice when illegally carried out by large-scale farmers. Can have negative consequences.

Chapter 4

Contracts and their specifications

This chapter reviews the legal framework of contracts, the basis for the agreement (the formula), the format or way the contract is presented, and the detailed specifications that must be included.

The legal framework

- *The contract should comply with the minimum legal requirements of the country*
- *Local practice must be taken into account*
- *Arrangements for arbitration must be addressed*

The formula of contracts can be based on ...

- *Market specifications, where only quality standards are specified and input provision is often minimal*
- *Resource specifications, where details of production, e.g. varieties, are specified. Input provision is often limited and income guarantees are minimal*
- *Management and income specifications, which are the most intensive and may involve predetermined pricing structures, farm input advances, technical support and managerial control*
- *Land ownership and land tenure specifications, which are a variation of the management and income model with additional clauses relating to land tenure. This formula is usually used when the sponsor leases land to the farmers*

The format

- *Formal agreements are legally endorsed contracts which closely detail obligations of each party*

- **Simple registrations** are the most common format which the farmer signs to indicate that he/she has understood the terms of the agreement and wishes a contract to be reserved for him/her
- **Verbal agreements** are frequently used under the informal model and sometimes by corporate sponsors

The specifications may include ...

- The duration of the contract
- The quality standards required by the buyer
- The farmer's production quota
- The cultivation practices required by the sponsor
- The arrangements for delivery of the crop
- The way in which the price is to be calculated using...
 - Prices fixed at the beginning of each season
 - Flexible prices based on world or local market prices
 - Spot-market prices
 - Consignment prices, when payment to the farmer is not known until the raw or processed product has been sold, or
 - Split pricing, when the farmer receives an agreed base price together with a final price when the sponsor has sold the product
- Procedures for paying farmers and reclaiming credit advances
- Arrangements covering insurance

*Examples of contracts
are referred to in this chapter
and given in the annexes.*

Introduction

Agreements, in the form of a written contract or a verbal understanding, usually cover the responsibilities and obligations of each party, the manner in which the agreement can be enforced and the remedies to be taken if the contract breaks down. In most cases, agreements are made between the sponsor and the farmer, although in the case of multipartite arrangements and some others, the contracts are often between the sponsor and farmer associations or cooperatives. In the case of arrangements through intermediaries, the sponsor contracts directly with the intermediaries who make their own arrangements with farmers. Four aspects need to be considered when drafting contracts:

1. *The legal framework:* The formal law of contract in a particular country, as well as the manner in which that law is used and applied in common practice.
2. *The formula:* The clarification of the managerial responsibilities, the pricing structures and the set of technical specifications that directly regulate production.
3. *The format:* The manner in which the contract is presented.
4. *The specifications:* The details of the implementation of the contract.

The type of contract used depends on a number of factors such as the nature of the product, the primary processing required, if any, and the demands of the market in terms of supply reliability. The nature of the agreement is also influenced by quality incentives, payment arrangements, the level of control the sponsor wants to have over the production process, and the extent to which the parties have capital tied up in the contract. A contract covering, for example, oil palm, tea or sugar, where significant long-term investment is required from all parties, will be different from a contract covering annual crops such as fruits and vegetables. A contract covering the production of fruits and vegetables for local supermarkets may not be the same as one covering such produce destined for overseas markets, which may have more rigid controls on pesticide use and product quality as well as higher presentation and packaging standards.

Although corporate bodies, government agencies and individual developers are of necessity the catalysts of the contract, farmers and their representatives

must be given the opportunity to contribute to the drafting of the agreement and assist in the wording of specifications in terms farmers can understand. Any contract, however brief or informal, should represent a mutual understanding between the contracting parties. Management must ensure that agreements are fully understood by all farmers. In many countries a high proportion of farmers may be illiterate and, therefore, it may be necessary to rely on oral rather than written contracts. However, the terms and conditions entered into must be written down for independent examination and copies given to the farmers' representatives. Copies should also be available to relevant government agencies.

THE LEGAL FRAMEWORK

All countries have basic laws that govern contracts. Farming contracts, whether written or oral, should comply with the minimum legal requirements that apply in a particular country. At the same time, however, it is important to take into account prevailing practices and societal attitudes towards contractual obligations, because in almost all societies these factors can produce an outcome that differs from the formal letter of the law. In some societies, for example, there may be an underlying assumption that contracts are intended to be respected only if certain factors remain constant. If climatic, political or personnel conditions should change, it may be considered socially acceptable for either party to disregard the contract, whatever the contract itself or the law may say on the subject.

Local practice may also influence the decision as to how detailed a contract should be, or whether it should be a formal contract or a more simple registration. Although there are examples of formal legal contracts that cover every eventuality, many contract farming arrangements, particularly in the developing world, are based on informal registrations. The Fiji Sugar Corporation, for example, has agreements with over 20 000 sugar-cane growers that are based on a comprehensive, legally binding document. Conversely, large tobacco schemes on the islands of Lombok and Java in Indonesia, involving tens of thousands of farmers, rely only on verbal understandings between farmers and their sponsors. In Thailand's sugar industry farmers and government personnel report never having seen a formal sugar-cane contract.

In the majority of cases, it is highly unlikely that a sponsor will take legal action against a smallholder for a breach of contract. The costs involved are inclined to be far in excess of the amount claimed, and legal action threatens the relationship between the sponsor and all farmers, not just those against whom action is being taken. Action by a farmer against a sponsor is similarly improbable. However, the improbability that a contract or agreement will be used as the basis for legal action does not mean that contracts or formal agreements should not be used. They can benefit both parties by clearly spelling out the rules of the relationship.

As neither side is likely to seek a legal remedy through the courts, it is important that ways of resolving disputes are identified in the agreement. A body representing the sponsor, farmers and other interested parties could be established in some cases, while in others a government agency might be the most appropriate forum. It is preferable that the contract farming industry regulates itself in order to offer a measure of protection for all participants. Participation of political nominees in such bodies should generally be avoided. Agreements between sponsors and contracted farmers are essentially voluntary undertakings and, in most cases, the two parties should control their own contract formulas and specifications. In some cases, however, there are advantages in having a single body managed by the industry to regulate a number of contract farming arrangements for the same commodity. The Fijian ginger and Tongan squash industry associations were established for that very purpose.²²

THE FORMULA

Each of the contract farming models discussed in Chapter 3 can operate under a variety of arrangements. Each contract is designed for a specific situation, the formula of which may be based on one, or a combination, of the following:

- market specifications;
- resource specifications;
- management and income specifications; or
- land ownership and land tenure specifications.

²² McGregor, A. and Eaton, C.S., 1989:18.

Market specifications

Under a market specification contract only quality standards are specified. The sponsors normally provide only minimal material and technological inputs. This is the most elementary type of contract formula and is commonly used by individual developers under the informal model.

Resource specifications

In this type of contract key components are stipulated, such as varieties and, perhaps, fertilizer rates, crop husbandry practices and the conditions under which the crop is purchased. Normally few financial or material advances are

Box 8

"Acts of God" clauses in contracts

In formal contracts it is sometimes necessary to include "Acts of God" clauses. Even when making verbal agreements sponsors must consider the possibilities of abnormal situations occurring that are beyond control, such as droughts, floods, cyclones, plant diseases or civil unrest.

In one instance a tobacco company included an "Act of God" clause to the effect that it would purchase farmers' tobacco leaf "while it was in a position to do so." When fire destroyed the company's curing operations an *ad hoc* pricing structure was negotiated with the farmers' representatives until alternative curing arrangements could be made. In this manner the farmers received partial payment for tobacco that they could not sell and the sponsor could not process.

Another company inserted a *force majeure* provision in its contract by allowing farmers to fill their quota through other sources. Any difference in price between that paid by the farmers to obtain the produce and that stipulated in the contract was to be shared equally between the sponsor and the farmer. *Force majeure* (the term used in the contract) was defined as very low crop production caused by the serious outbreak of disease or by abnormal weather conditions.

provided under resource specification formulas. Product prices tend to be based on the open market and income guarantees are minimal. Many well-established individual developers operate under the informal model and some centralized processors use this type of formula.

Management and income specifications

Contracts that focus on management and income specifications usually strictly regulate product standards. They are basically a combination of the market and resource specification formulas but, in addition, sponsors may establish

Table 3
Characteristics of contract formulas

TYPE OF FORMULA	SPONSORS	GENERAL CHARACTERISTICS
Market specifications	Individual developers State marketing authorities Farmer cooperatives Subcontractors	Basic controls for quality standards. Minimal inputs and conditions. Payments to farmers generally based on the open market.
Resource specifications	Individual developers Private corporate sector State agencies Farmer cooperatives	Important crop husbandry requirements in contract. Payments to farmers sometimes based on open market, sometimes fixed. Limited material inputs to farmers.
Management and income specifications	Private corporate sector National development agencies	Directed contract farming. Intense contract formulas; high degree of material and management inputs. Prices to farmers are fixed and adjusted on a seasonal basis. Common under centralized and nucleus estate models.
Land tenure specifications	Private corporate sector National development agencies	Clauses relating to land tenure and land use conditions part of the formula. Normally directed contract farming. Intense contract formulas, high degree of material and management inputs. Common under centralized and nucleus estate models.

predetermined pricing structures and make heavy commitments in the form of farm input advances, technical inputs and managerial control. This formula is the most commonly used by the multipartite, centralized and nucleus estate models.

Land ownership and land tenure specifications

This type of contract is an extension of the management and income model, with additional clauses relating to land tenure. Wherever private companies or government agencies lease land to farmers for contract farming, formal crop-land tenancy contracts on a long-term basis are necessary. These contracts should be legally binding and can contain clauses relating to both crop and land husbandry. Land tenure specifications may stipulate the other crops that farmers are allowed to cultivate in proximity to the contracted crop. This is in order to avoid the risk of disease.

Box 9

Land tenure for contract farming

Contract farming ventures involving leased land can be complex. During the 1960s a Malaysian parastatal organization, the Federal Land Development Company, leased 715 000 hectares of state land to more than 100 000 farming families who, in turn, grew crops under contract. Over the first decade serious problems developed regarding absenteeism, illegal subcontracting and crop quality. In order to control these problems the company introduced stricter clauses, raising the possibility that land leases could be cancelled. By 1987 the contracted tenants had improved their production performance and were producing 10 percent of the nation's rubber and 25 percent of its palm oil. The project had become a flourishing model of an integrated approach to rural development.²³

²³ Ghee, L.K. and Dorell, R., 1992: 103-106; Centre for Research and Communications, 1990: 20-22.

One early example of a land tenure contract was the Gezira cotton venture in the Sudan referred to in the Introduction. In spite of its “colonial” nature the Gezira project helped introduce an innovative concept of agricultural development. The venture established control over the use of the land, insisted on terms of tenancy related to an economically viable unit and developed sound agricultural rotation. Such measures led to production efficiencies previously only attainable by large-scale estate management.²⁴

One land tenancy agreement for a cotton contract scheme in Zimbabwe stipulated that there was an “explicit restriction on non-farm activities.” The restriction centred on the objective of the sponsors to confine farmers to growing only cotton.²⁵ Formal tenancies of this nature should at least allow for subsistence production for farmers and their families.

Many contract farming ventures are in areas where customary land usage arrangements are negotiated between landless farmers and traditional landowners. While this allows the poorest cultivator to be included, sensitive measures must be applied to ensure that contracted farmers are not exploited as a result of landowners charging excessive rents.

THE FORMAT

The various formats that a contract may take are:

- formal agreements;
- simple registrations; and
- verbal agreements.

Formal agreements

Explicit, legally endorsed contract formats, which closely detail the conditions and obligations of each party, are particularly common in projects that involve heavy investment in capital infrastructure or where sponsors lease land to farmers specifically to grow crops under contract. However, such contracts can also be used when land tenure is not a factor.

²⁴ Jackson, J.C. and Cheater, A.P., 1994: 160-161; adapted from Gaitskill, A., 1959.

²⁵ Jackson, J.C. and Cheater, A.P., 1994: 160-161.

Simple registrations

These are a common contract format used by most centralized operations and, to a lesser degree, under the informal model. The term “registration” usually refers to a signed confirmation from the farmer that he/she wishes the sponsor to reserve a contract for him/her. Simple registrations are based on so-called “informal associations of trust and patronage that bypass formal legalities.”²⁶ With a flexible and sensitive managerial approach, a simple registration is a proven and practical way to sustain contractual arrangements. Annex 2 shows a seasonal maize contract in the form of a one-page registration sheet. The contract is divided into technical and financial sections. The technical aspects of the agreement are drafted in short, simple terms, clarifying the responsibilities of both sponsor and farmer. Pricing formulas in the financial section are

Box 10

Transient verbal contracts

Starting originally under a farmer cooperative project in northern Thailand, farmers produced fresh eggs for a single sponsor under verbal arrangements. They were paid a guaranteed price of 1.50 Baht per egg. In 1997 a number of farmers changed to another buyer. Although the price offered by the latter was higher, between 1.70 and 2.00 Baht per egg, it was not guaranteed. Nevertheless the farmers considered the risk worthwhile and forfeited the guaranteed price given by the original sponsor. In 1999 one farmer changed his sponsor yet again. He did this because the new buyer graded eggs at the farm and not at the factory. Prices and material inputs provided by the third sponsor were similar but the farmer preferred on-farm grading. Although farmers do have flexibility in choosing their preferred sponsor under such arrangements, such flexibility can have a negative effect when practised by sponsors. Actions to change farmers at random can cause serious dislocation and acrimony.

²⁶ Watts, M.J., 1994: 26.

designed to encourage farmers to produce maximum yields, while Clause 9 is included in order to control the possibility of extra-contractual marketing.

Normally, the registration of farmers for the following season commences immediately after the last harvest. In well-established projects, registration for many farmers is only a formality or, perhaps, involves just a change of name of a family member. Following registration, field staff approve the land on which the crop is to be cultivated and decide on production quotas based on potential performance.

Verbal agreements

Unwritten or verbal agreements are commonly used by informal individual developers and sometimes by corporate sponsors. A major problem of verbal agreements is the interpretation of responsibilities and specifications. Confusion and misunderstanding can easily occur if the agreements are not clearly explained by management to the farmers and their representatives. In turn, the managers' field extension staff must also have a clear understanding of the terms of the agreement.

THE SPECIFICATIONS

Contracts will need to specify some or all of the following aspects of the sponsor-farmer agreement:

- contract duration;
- quality standards;
- production quotas;
- cultivation practices;
- crop delivery arrangements;
- pricing arrangements;
- payment procedures; and
- insurance arrangements.

These are discussed in this chapter. In addition contracts will normally specify technical support and inputs to be provided by the sponsor, as reviewed in Chapter 5.

Contract duration

The duration of agreements depends on the nature of the crop. Contracts for short-term crops such as table vegetables are normally issued and renegotiated on a seasonal basis, whereas crops such as tea, coffee, sugar cane, and cocoa require long-term contracts that can be amended periodically.

Quality standards

Product quality or, more precisely, the absence of quality, can have far-reaching consequences in terms of market acceptance and future expansion. Most contracts contain detailed quality specifications so that produce that does not conform to the agreed criteria can be rejected. It is important that farmers fully understand the reasons for standards and also understand that the acceptance of poor quality produce from some farmers will ultimately affect an entire project and thus there is no long-term advantage to individual farmers to try to cheat. In the case of most smallholder tea schemes, for example, all leaf purchased on one day is processed at the same time. Poor quality green tea delivered by a few farmers will reduce the overall quality of the processed tea, thereby reducing returns for all.

Quality specifications may specify the size and weight of the product, the degree of maturity and the manner in which it is packaged and presented. A major problem with quality standards is that they are frequently vague and not clearly understood. This uncertainty could cause corruption problems, for instance the sponsors' employees seeking bribes to upgrade produce, or unfair practices by management such as trying to downgrade produce in order to reduce purchases when market conditions are poor. The use of terms such as "grade one, grade two," or "first quality, second quality" without clear specifications as to what these mean is unacceptable. Box 11 gives an example of grading specifications for Virginia tobacco purchased as fresh, uncured leaf. The description of each grade is kept as simple as possible, yet distinctly highlights the grade parameters. Extension staff should demonstrate the grades to farmers at the beginning of each season and explain the rationale for the specifications. It may also be necessary to specify the maximum content of each delivery container as quality can suffer if containers (boxes, bags, slings, bales, etc.) are overpacked.

Annex 3 shows a contract offered to Greek tobacco farmers. Its coverage of quality issues is complex and indicates the perceptions of past and future litigation. In contrast, Annexes 2 and 4 present two examples of simple contracts for maize and export papaya respectively. Contracts require continual scrutiny and revision by managers to ensure that the arrangements are updated and to avoid flaws becoming permanent and, therefore, a risk to stability. Annex 5 is a very complex and confusing swine-raising contract. Such a detailed contract, based on the expectation of problems and the desire to cover every eventuality, may meet the legal requirements of the sponsor but will inevitably cause confusion among the farmers.

Box 11**An example of grading specifications for fresh tobacco leaf**

- Grade I. Fully ripe, disease free, and of good thickness/body
- Grade II. As above, but slightly diseased or blemished
- Grade III. Bottom four leaves (lugs) and other curable leaf except unripe or overripe leaf, suckers, broken leaf, badly diseased leaf (more than one-third blemished) and leaf less than 30 cm in length

Note: In the interest of preserving quality no bag should weigh more than 40 kg. Slings in excess of that weight will be downgraded.

Source: Adapted from Southern Development Company (SDC), Fiji, pers. comm.

Wherever possible, the number of grades should be kept to a minimum and each grade's specifications should be presented in clear terms. Unfortunately some contracts have demanded a complex multiple-grade system. In one instance, for example, there were 41 different grading specifications in a single contract. This resulted in widespread confusion that led to misunderstandings and, ultimately, confrontation. In another case strike action by farmers on a project in the South Pacific continued for two seasons and ended only when management introduced a simplified grading system. The grades were reduced

from twenty-nine to three, thus making things more practical for the farmers. There was no subsequent deterioration in crop quality because of the introduction of a new processing technique designed to accommodate the simplification of the grading system. Often, however, there may be a need for only one standard, with all produce delivered being required to fall within a particular specification range. For example, in the case of papaya for export from Fiji only a single price was offered. The grade specifications were based solely on the size and maturity of a single variety, these two components being critical for market acceptance (Annex 4).

Raw materials for processing are often purchased on the basis of the likely extraction rate. For example, sugar-cane deliveries are often sampled to ensure that they meet the minimum juice purity specified in the contract. In France and Italy, among other countries, members of wine cooperatives are paid according to the sugar content of their grapes. Such individual calculations, however, are not usually possible with relatively small-scale farmers as their product is bulked up with that of several others for transport to the processing facility. Oil palm farmers, for example, are usually paid on the basis of the average “fresh fruit bunch” conversion rate achieved by the factory over a specified period.

Production quotas

Both insufficient and excessive production can have serious ramifications. Overproduction can mean unpopular quota reductions and costly stockpiles. Conversely, underproduction caused by poor farmer selection, disease or climatic factors could eventually result in a project becoming insolvent, as processing costs per tonne could rise to unacceptable levels. Moreover, if a processing plant is unable to meet pre-arranged marketing contracts, future orders could be decreased or cancelled. Quotas are employed in the majority of contracts in order to:

- utilize processing, storage and marketing capacities efficiently;
- guarantee markets for all farmers;
- ensure quality control; and
- monitor farmers’ performance.

Utilize processing, storage and marketing capacities efficiently. Failure to purchase any part of a farmer's production that meets the specifications of the contract will cause serious discontent. This could occur through poor calculation of the sponsor's capacity to handle, process, store and market the production. Sponsors need to limit their contractual commitment to buy from farmers to only the quantities they can process (in total and, depending on the product, on any one working day) and market. Processing is also often restricted by the capacities of the sponsors' and farmers' warehouses.

Quotas allocated on the basis of actual volume to be produced by each farmer or, alternatively, on a defined area to be planted should overcome some of these concerns. In Thailand, for example, cassava farmers are issued rootstock of a specific variety by their sponsor. The quantity of the stock issued is proportional to the area that the extension staff considers sufficient for the farmer to transplant, plant and cultivate. The advance of the rootstock material becomes, therefore, the production quota. All production from the allocated rootstock is purchased in accordance with the grading specifications that indicate the specific gravity and the degree of pest damage of the cassava.²⁷

Guarantee markets for all farmers. Specific quotas allocated by managers in each individual contract should guarantee that all farmers would be able to sell all of their production that meets the agreement's conditions. Without quotas, sales by farmers would be on a "first-come-first-served" basis. Theoretically, deliveries by some farmers could exceed the requirements of the sponsors, resulting in some other farmers being unable to sell any or only part of their crop.

Ensure quality control. Quotas can sometimes be used to control the quality of the raw commodity. For some crops, increases in quantity may only be achieved as a result of reduced quality, for example, as measured by the extraction rate. Farmers may be tempted to manipulate weights through fraudulent methods such as wetting the crop before sale or by adding foreign

²⁷ Frito-Lay, Thailand, pers. comm.

matter. Sponsors can reduce the likelihood of such practices by setting quotas based on expected output for a given area.

Monitor farmers' performance. As a means of monitoring farmers' production, quotas are used as a benchmark by which to analyse crop yields. Through the efficient monitoring of crop development, extension officers can usually make realistic yield forecasts. If yields fluctuate widely then abnormalities can be investigated and remedial measures taken. The use of quotas also permits the sponsor to identify whether farmers are selling crops outside of the contract (i.e. extra-contractual marketing) or whether they are supplementing their sales to the sponsor with non-contracted production from other farmers. The management techniques used to estimate and scrutinize production yields are described in Chapter 6.

The allocation and distribution of production quotas will vary according to crop and circumstances. Where there is no alternative market for the crop and farmers have made significant long-term investments in production (tree crops) or processing facilities (e.g. tobacco curing barns), the sponsor must be committed to purchase the entire crop covered by the quota. This obligation, of course, is subject to the crop meeting the agreed quality specifications. The most common and practical method is to allocate quotas on an area basis, with managers calculating the total area to be cultivated in relation to the project's processing capacity and their knowledge of each farmer's expected yield.

Managers must also address the issue of how the quotas will be allocated between locations and between the farmers they select (Chapter 5). In Mozambique's Nampula province, for example, sponsors assign a similar land area to all farmers included in the schemes. While farmers can be rejected for failing to fulfil production targets or repay credit, land size allocations do not vary. Such an approach is seen as avoiding conflict within the community and avoiding corruption in quota allocations.²⁸ On the other hand, allocating a quota that the farmer cannot cultivate, either by area or quantity, will cause serious problems. Reductions of quotas in subsequent years or cancellation of

²⁸ C. Donovan, pers. comm.

contracts on the grounds of failure to supply agreed quantities could cause demoralization and a loss of prestige for the farmer. The allocation of appropriate quotas that reflect the different levels of resources and skills of the farmers and, at the same time, permit a wide range of farmers to have contracts will add to the stability of contract farming ventures.

Where there are alternative markets for crops under contract, quite often farmers are tempted to sell outside the contract. Quotas deliberately set at levels lower than the farmers' actual production capacity may enable them to take advantage of high open market prices when they occur. Such an arrangement is likely to apply particularly when the pricing arrangement is for a fixed price rather than a market-based price. An example of this is found in passion fruit production in Colombia. Such an arrangement cannot be acceptable in all cases; for example, a company that supplies farmers with day-old chicks and their feed will obviously expect the farmers to deliver the same number of chickens minus, of course, deaths.

There are examples of contracts where quotas are superfluous. This particularly applies when the crop has several buyers in active competition, and when it is unlikely that the company will be able to purchase more than the throughput of its processing facilities and thus wants to maximize its purchases. It is most common under the informal model, an example being the cotton industries of Zambia and Zimbabwe where several gins are in active competition for the available crop. In other circumstances, however, the absence of quotas can work to the disadvantage of the farmer. For example, although farmers in the Punjab grow tomatoes under formal contracts, the sponsors do not issue fixed quotas. The sponsors purchase only the amount they require leaving farmers with no option but to sell surpluses on the open market at a reduced price. The buyer therefore has much greater bargaining power than the farmers.

The sale of quotas between farmers should be discouraged in that the new farmer may not meet the farmer-selection criteria and the practice could lead to corruption. In all ventures there is always a degree of attrition; some farmers die, others retire or sell their land and move to other districts. In such situations, management usually transfers the contract to family members or nominees of

the previous contractor on the understanding that the newcomer meets the selection conditions.

Cultivation practices

When sponsors provide seeds, fertilizers and agrochemicals, they have the right to expect that those inputs will be used in the correct quantities. They also have the right to expect that farmers follow the recommended cultivation practices. Of particular concern is the possibility that farmers may apply unauthorized or illegal agrochemicals which can result in toxic residues, with dramatic repercussions for market sales. It is therefore essential that all contracted farmers adhere strictly to the project's input policies. Managers and their extension staff must make every effort to explain to farmers why the specifications and input recommendations must be followed.

Crop delivery arrangements

Arrangements for collection of products or delivery by the farmers vary widely. Some ventures stipulate that farmers should deliver their harvest to processing plants at given dates; others may include the use of the sponsor's transport to collect harvested crops at centrally located buying points. For contracted fresh vegetables a normal practice is farmgate collection. When the sponsor's transport is used there is normally no cost to the farmer. In the sugar industry, small railways are used extensively; farmers deliver their harvested cane to a central loading point from which it is then transported to the crushing mill, weighed and purchased. Many formal contracts have clauses that outline the obligations of both the farmer and the sponsor regarding delivery and collection respectively. As a routine practice, managers and their extension staff should confirm delivery or collection arrangements at the beginning of each season and reconfirm these prior to harvest.

Pricing arrangements

Pricing and payment arrangements are the most discussed and challenging components of all farming contracts. The choice of which crop pricing structure to use is influenced by whether the crop is for the local or export market, the seasonal nature of production and the degree of competition in the marketing

system. The application of transparent pricing formulas is crucial and the drafting of a clear pricing structure and the organization of a practical method of payment encourage confidence and goodwill. There are several ways prices offered to farmers can be calculated, including:

- fixed prices;
- flexible prices;
- prices calculated on spot-market values;
- prices on a consignment basis; and
- split pricing.

Fixed prices. Fixed prices are the most common method. The practice is usually to offer farmers set prices at the beginning of each season. In almost all cases, fixed prices are related to grade specifications. In calculating prices there may be a tendency for sponsors to adopt a cautious approach because of the danger of market price fluctuations. Fixed price formulas are usually ideal for the sponsor; however, where alternative outlets exist, farmers may consider such arrangements to be disadvantageous if prices increase on the open market. For managers, the set price formulas are preferable for both budgeting and marketing purposes, although they are still obliged to purchase the crop at the prices stipulated in the contract if the open market prices decrease below the set prices. The fixed price structure is widely used by tobacco corporations

Table 4
Pricing and grading structure of cassava
under contract in Thailand

Grade	Specific gravity (%)	Surface damage (%)	Pricing structure
	Standard value	Standard	Baht/kg
1	> 17.6 %	0.0%	7.30
2	>16.6 – 17.6%	0.0-1.0%	6.85
3	>15.6-16.6%	1.0-2.0%	6.40
4	>14.6-15.6%	2.0-3.0%	5.95
5	<14.6%	>3.0%	5.50

Source: Adapted from information provided by Frito-Lay, Thailand

and companies processing crops for canning. Table 4 shows a set price formula for cassava, based on specific gravity and pest damage.

Flexible prices. This structure applies to prices calculated on a formula related to changing global and local markets. This form of pricing is common in, for example, the sugar industry where the final price to the farmer is known only after the processed sugar has been sold. Farmers are paid on the basis of a formula which takes into account agreed processing and other costs of the sponsor as well as world market prices over a particular period. The prices of internationally traded commodities for which there are few, if any, grades are readily accessible and should also be made available to farmers. In Papua New Guinea, smallholder oil-palm producers on nucleus estates are paid on the basis of such a formula, which is monitored and approved by the Government. In Guyana, sugar-cane producers receive two-thirds of returns from sugar sales and the factory one-third, to cover costs and profit.

In some cases farmers and sponsors may share price increases and costs proportionately. In the Philippines, for example, a pig-rearing contract specifies that the farmers and the company shall divide proceeds equally, after deduction of the agreed expenses of the company. The expenses include stock feed, medication, a marketing fee and an allowance for shrinkage between delivery of the animal and eventual sale. Such a profit-sharing arrangement can be successful if the contractor is efficient and honest. However, in other circumstances this system can seriously prejudice farmers by putting them at the mercy of inefficient processing and marketing. Wherever payments are dependent on fluctuating markets an independent arbitration mechanism should be developed by the industry to safeguard the interests of both the farmers and the sponsors.

Prices calculated on spot-market values. Payments based on spot-market prices can be very complex and often lead to misunderstandings and disputes. Such an arrangement removes income guarantees for farmers but does enable them to take full advantage of high market prices. The main problem with this approach is that sponsors and farmers must arrive at a common understanding of what constitutes a market price that is relevant to the higher quality that

contracted farmers could be expected to produce. This form of pricing is common in Thailand where individual small-scale developers act as brokers under informal contracts. The brokers make arrangements with farmer groups to sell fresh vegetables to wholesalers. They collect the crops at the farmgate, arrange transport to Bangkok and, after the produce has been sold, pay the farmers a percentage of the final sale price. In most cases the open market pricing system is unsatisfactory, as the farmers do not have control over the price they receive or knowledge of how it is calculated.

Prices on a consignment basis. Prices calculated after the produce has been marketed and sold may be considered another form of spot-market pricing. This form of payment is normally termed "on consignment" and is mainly used by informal small-scale developers. In another example from Thailand, individual developers arrange to supply crops to markets on consignment. They take a commission out of the farmers' revenue and, at the same time, deduct the costs of seed and fertilizer advanced to the farmers. Consignment pricing arrangements are rarely found in well-structured contract farming projects and are best avoided. The growing importance of supermarkets suggests that more and more fresh produce will be delivered at predetermined prices rather than on a consignment basis.

Split pricing. Under this system an agreed base price is paid out at the time of purchase or at the end of the harvesting season. The final price is calculated once the sponsor has on-sold the commodity, and depends on the prevailing market price. If the crop is sold in the fresh form the second price can usually be calculated within a month. When the product is processed it may take much longer.

Payment procedures

For all farmers the most convenient method of payment is usually cash-in-hand immediately following delivery of any part of their crops. However, this is not always possible, particularly if the sponsor has limited resources, where payment depends on the total production after processing, or where the payment is based on the price the sponsor obtains. Also, the company may have the

obligation to repay loans advanced by banks to farmers using the contract as collateral. In the majority of cases payments are made periodically throughout a season, perhaps two to four times, with the final payment after the last harvest. Any material and cash advances given to farmers during the season are normally deducted from the final payment.

Insurance arrangements

Agricultural investments always involve risk. The five most likely reasons for investment failure are poor crop management, climatic calamities, pest epidemics, market collapse and price fluctuations. The standard agribusiness approach to indemnify against quantity shortfalls is crop insurance. Although government-run crop insurance schemes often prove to be unsatisfactory, success with insurance programmes offering named (i.e. limited) peril cover for certain crops has been reported in Mauritius, the Philippines and Cyprus. There is also a growing awareness by the private sector that crop insurance should be encouraged and promoted.²⁹ As the farming involved in a contract arrangement becomes technologically more advanced, the range of risks to which it is subject generally becomes more limited. In many cases some of the remaining risks can be managed with the assistance of insurance.

For seasonal contracts that are based on a fixed price payable at harvest, it is unlikely that farmers will be affected by market collapse or price variations; however, they are vulnerable to production losses caused by climatic or human factors. Some authorities classify the four main categories of crop insurance in order of "their comprehensiveness in terms of coverage of risks" as follows³⁰:

- "Acts of God";
- destruction of specified assets;
- loan default; and
- production and income loss.

²⁹ Roberts, R.A.J. and Dick, W.J.A., eds., 1991: 4-5 and 30-32.

³⁰ Mosely, P. and Krishnamurthy, R. in Mishra, P.K., 1996: 271.

"Acts of God". This category encompasses natural disasters such as drought, floods, hail, storms, cyclones, lightning, insect plagues and disease epidemics that are beyond management control. In India, for example, efforts have been made to introduce rain-insurance contracts based on rainfall duration, the precise rainfall shortfall and a prearranged schedule of indemnities.³¹ The degree of insurance compensation for damage by flood, storms or hail is difficult to assess when there is only partial loss. Field crops that have been damaged by a fractional flood or hail require an experienced and independent assessor who would not only have to evaluate quantity losses but also the quality of the crop at the time of the damage. Some contracts may have "Acts of God" clauses inserted, although such clauses are uncommon.

Destruction of specified assets. Many farmers insure their houses, garages, grading and storage sheds as a matter of routine. Tractors and farm implements can be insured against damage and theft. Insuring of curing kilns by farmers when growing tobacco under contract is essential. If a contract farming venture is well established, management can sometimes organize the insurance of non-contractual farm buildings and housing as part of the sponsor's total indemnity policies, reducing the cost of premiums to the grower.

Loan default. In almost all ventures, sponsors assume the liability of credits advanced by management to the farmer for the contracted crop. It is therefore important that advances do not accumulate into debts that the farmer cannot repay. Managers normally allow farmers who cannot repay advances because of climatic or other mitigating factors to extend their loans to the following seasons. Sponsors, of course, do have the option to indemnify their farmer loans against default through their own insurance brokers.

Production and income loss. Insurance against both production and income loss is expensive and complex. Production loss may be caused by a combination of factors that are difficult to insure against. To determine who is culpable

³¹ Mishra, P.K., 1996: 274 (for such arrangements to work effectively, rainfall recording gauges must be secure and protected against interference).

when a crop is destroyed by insects is one example. Was it an "Act of God" or the failure of the farmer to take measures for pest control at the appropriate time, or was it the fault of management for not training and instructing the farmers in pesticide techniques?³² There are also social risks that could cause crop loss such as theft and animal damage. In the case of injury to crops by horses, goats or cattle, the project's management staff assess the value of the destroyed crop. If the owners of the animals are not contracted farmers, local community leaders can sometimes negotiate compensation. If the owners are also contracted farmers, compensation disputes can often be negotiated through farmer forums.

Where there are fixed price contracts there is no apparent risk to farmers with regard to payment for their crops. If a market collapses, the sponsor should automatically shoulder the loss. However, if the sponsor becomes bankrupt, farmers could be permanently affected. Where contracts are on a flexible or spot-price basis the stability of farmers' incomes is always at risk.

In theory, the proposal of crop and property insurance for farmers in contract farming ventures is appealing. However, before advising farmers to consider insurance, a qualified risk analysis should be made to determinate the economic advantages of insurance against the specific risks applicable to the particular crop.

³² Ray, P.K., 1981:10.

Chapter 5

Managing the project

Poor management can cause potentially promising contract farming ventures to fail. The chapter reviews the management aspects of coordinating and supporting production by farmers and the delivery of their crops to the sponsor.

Coordinating production requires advance ...

- *Identification of areas that are suitable for production and provide easy access for transport and other support*
- *Selection of farmers. Criteria will vary according to the crop and intensity of the contractual relationship*
- *Formation of working groups. While not essential such groups can be valuable for provision of extension advice, delivery of inputs and crop collection*
- *Arrangements for the ordering and supply of inputs and provision for farmer credit*
- *Planning of logistical support for input delivery and product transport*
- *Arrangements for purchasing the product in accordance with the contract, in particular to ensure that farmers can verify weights and qualities*

Managing the agronomy involves ...

- *Field extension services. Staff must be fully familiar with the product involved and, preferably, have local knowledge*

- *Transfer of technology, with an awareness of adaptation problems that smallholders could face*
- *The use of cropping schedules to ensure the correct timing and sequencing of all contractual activities*
- *Training for extension staff and farmers, and research into varieties and cultivation practices*

Farmer-management relations can be maintained and strengthened by paying attention to ...

- *Farmer-management forums, which link management and farmers or their representatives for purposes of interaction and negotiation and can avoid many of the problems caused by a lack of communication*
- *Male-female relationships, which can be adversely affected by contract farming through ...*
 - *Payments to men for work largely carried out by women*
 - *Conflict between contract requirements and women's priorities with regard to subsistence farming*
- *Participation in community affairs, which helps to create a positive atmosphere of partnership. This can include both participation in social events and provision by the sponsor of small-scale local infrastructure*

Introduction

Poor management can cause potentially promising contract farming ventures to fail. This chapter describes the steps that managers must take in order to coordinate production activities and the delivery of products by farmers to the processing and/or marketing facilities. Stress is placed on the need to carry out all activities in a transparent and participatory fashion so that the farmers fully understand their obligations and those of management. For this to be achieved, the maintenance of harmonious relations between management and contracted farmers is essential.

COORDINATING PRODUCTION

A number of specific organizational and administrative activities have to be carried out before production commences. The key issues that managers must address in advance are:

- identifying suitable production areas;
- selecting farmers;
- forming working groups;
- providing material inputs;
- providing logistical support; and
- purchasing the product.

Identifying suitable production areas

Following the choice of a suitable physical and social environment (Chapter 2), management must then select specific areas that can provide easy access for extension and logistical services. It is usually important for the contracted farmers to be situated relatively close to the company's processing or packing facility. Not only does this allow perishable produce to be processed without delay but it also permits management and technical and extension staff to be based at one centralized location. The raw material for many crops (e.g. oil palm, leaf tea, sugar cane) is far more bulky than the finished product, and by locating the processing facilities closer to the primary producers transport costs can be minimized.

There are, however, situations where it is more practical to spread production over a larger area. This may be when farmers are situated in many districts and channel their production to a number of processing units controlled by a single sponsor. The cultivation of crops in different areas can also reduce the risk of total crop failure due to irregular weather patterns or disease. Such a strategy helps to guarantee a regular supply for processing and marketing. In such cases it is more convenient for extension officers to reside in or near their areas of responsibility. At times the most advantageous areas for growing the crops may not be the most logical locations for a factory. Vegetables for canning, for example, can sometimes be grown long distances from the factory. A canner in the Philippines organized farmers situated over a wide area to grow both sweet and baby corn to take advantage of climatic variations in order to maintain regular supplies throughout the year. In Kenya, French beans for canning are grown between 150 and 230 kilometres from the factory because the climate in the production area allows for the beans to be grown under rain-fed conditions. Where several areas are chosen, they must all be able to provide a sufficient quantity of production to ensure that services provided to the farmers can be carried out in a cost-effective manner.

Selecting farmers

Following the choice of production areas the next requirement is to select farmers. Management must decide how many farmers should be offered contracts and the criteria for their selection.

Farmers can be approached individually, through the offices of agriculture departments, through community leaders and farming cooperatives, or by an open invitation to apply. Selection criteria should be based initially on an assessment of the suitability of the farmers' land and confirmation of their tenure security. If those two conditions are met, an evaluation needs to be made of the prospective contractor's farming experience, past production record, desire to cooperate and the extent of his/her family labour inputs. All selection appraisals must take into account the complexity of the household economy and examine how the contracted crop can be incorporated within the farmer's total farming mix.

Community leaders and local government officials are, in general, dependable sources of knowledge on the capabilities and attitudes of farmers in their villages and districts. Managers should be aware, however, that petty rivalries and extended family obligations are characteristics of some rural societies. Farmer selection therefore should also be judged on the manager's own intuition and available independent assessments. In the case of the production of French beans in Kenya, mentioned above, the factory uses local government administration, government agricultural extension offices and its own field staff to select farmers. Criteria used for selection are soil type, the agricultural experience, competence and reliability of the farmers, combined with their ability to cooperate with others.

While failure to select some farmers may cause resentment, the arbitrary selection of farmers who fail to produce the desired quality and quantities can be commercially disastrous. In one venture in Thailand, for example, farmer selection for the cultivation of vegetables for canning was deemed to be very lax. Because of high product demand and land shortages, the company accepted virtually all farmers. Furthermore, application forms were circulated after most farmers had signed their contracts, a practice that caused an atmosphere of confusion and uncertainty.³³ Managers should, wherever possible, verify that the production potential of any district is in excess of their requirements in order to provide them flexibility to choose the most qualified farmers.

The criteria for farmer selection are likely to vary according to the type of crop. Less rigorous standards can be adopted for short-term seasonal crops in that farmers who fail to perform can be excluded from subsequent contracts. For tree crops, however, a long-term commitment is required and thus sponsors need to be assured of the reliability of the farmers and of their ability to continue to farm for many years. In an oil palm venture in Ghana, for example, the majority of the selected farmers were "veterans" with at least twenty-five years experience. This resulted in an age and marital composition that could be expected to raise constraints for future production because there were few younger farmers and the farmers were limited to immediate family labour only.³⁴

³³ Laramee, P.A., 1975: 48, 56.

³⁴ Daddieh, C.K., 1994: 202-204.

Transmigration or settlement schemes in a nucleus estate context involve the risk that the farmers will be unhappy in their new environment and wish to return to their original homes. Rigorous selection procedures can minimize, but not altogether avoid, such risk.

Crops such as cotton, maize, tobacco and vegetables are grown under contracts that are normally reviewed and renegotiated on a seasonal basis. Periodic reviews allow for pricing and technical adjustments at the beginning of each season, for new farmers to be registered and, where appropriate, for the quotas of farmers who are less productive to be reduced to levels they can reasonably manage. When a farmer requires the use of outside labour, an assessment of the availability of such labour and the farmer's ability to manage it will be necessary.

Forming working groups

Although a company usually deals with farmers directly through its extension service, it can be advantageous to organize small-scale farmers into groups. Such groupings can serve a number of functions such as taking joint responsibility for credit or cash advances, monitoring applications for inputs and arranging for the delivery of inputs and collection of the crop after harvest. Formally organized groups can provide suitable units for delivery of extension advice. In Malawi, for example, tea growers under one contract are divided into twenty-one blocks. Each has a committee responsible for matters such as settling disputes and ensuring that members follow the recommended crop husbandry practices and abide by the conditions of the contract. Some tenant tobacco growers in Malawi are also divided into blocks, with each block having a leader who organizes group activities, including a seedling nursery and soil-conservation activities. The farmers apply fertilizer to their fields as a group in order to avoid diversion of the fertilizer to food gardens or to the open market.

The largest cotton company in Zimbabwe supplies inputs to self-selecting farmer groups. The whole group is penalized if one member defaults, so there is an incentive for peer policing to ensure repayment. Monetary rewards are given to groups with high repayment rates. On the other hand, defaulters are followed up quickly and assets can be seized. The company originally established groups with a minimum of fifty farmers, but experience has shown

that to be too many and it now works with a maximum of twenty-five farmers per group. A company that exports vanilla from Uganda works through groups of farmers organized into local associations. The associations play a leading role in selecting suitable farmers, recovering loans and bulking up the vanilla for purchase.³⁵ Similarly, Box 12 presents an example of farmer groups or associations who control production, with the sponsor having direct contact with farmers only when conducting training programmes.

Box 12

The role of farmer groups in Colombia

The Passicol Company of Colombia contracts out blackberry, passion fruit and papaya production to 14 work groups or associations comprising approximately 400 farmers.

The company has an agreement with these farmer groups or associations who then subcontract to their members. The company has no direct dealings with farmers in so far as crop production is concerned. The role of the associations is to:

- supply inputs to the farmer;
- collect all produce from farmers;
- guarantee the contracted volume to the company;
- provide infrastructure to store and grade production; and
- arrange finance for farmers from public and private institutions.

The associations recover administrative and overhead costs out of the payment from the company before settling accounts with the farmers.

³⁵ Springfellow, R., Lucey, T. and McKone, C., 1996: 28.

Box 13**Growers' Association in Kenya**

A multipartite project in Kenya, the Mumias Sugar Company (MSC), which was formed by a multinational, the Commonwealth Development Corporation (CDC) and the Kenyan Government, actively promoted a growers' association, which eventually took over the normal administrative responsibilities of a sponsor. The association's board of directors comprised four growers' representatives, three government representatives and one each from the multinational corporation and CDC.³⁶ Following the formation of the Mumias Outgrower Company, the association took over the administration of the project's accounting and farmer-sponsor negotiations and became a forum for complaints, while the MSC retained responsibilities for crop agronomy, transportation and processing.³⁷ Other functions of the association included:

- representation for association members;
- provision of credit for cane production;
- purchase and distribution of farm inputs;
- arrangement of all financial transactions associated with sugar-cane production; and
- the establishment of provident funds for the contracted growers.

Providing material inputs

The provision of material inputs to farmers is an important feature of contract farming. Before the start of each season, managers should calculate the pesticide and fertilizer requirements for each farmer based on his or her production quotas. Material advances can, on occasions, extend to the financing of draught

³⁶ Glover, D. and Kusterer, K., 1990: 105.

³⁷ Adapted from Goldberg, R. and McGinty, R., eds., 1979: 557-8.

oxen and horses, ploughs, spraying equipment, small irrigation pumps and other ancillary farm tools. Tractors and heavy machinery can also be advanced to farmers who have proven performance records. Sponsors sometimes guarantee instalment payments to banks and credit agencies for heavy equipment. Such payments are deducted from the farmer's crop proceeds and, naturally, can be extended over a number of years. Annex 1 presents an example of a sponsor's material and cash advance policies in a project with a high level of material inputs.

All inputs should be ordered and supplied to the farmer well in advance of sowing or transplanting. The normal administrative procedure is for the administration staff to maintain a statement of account for each farmer, detailing credits of crop purchases and debits for material advances. The normal method of repayment for inputs and other assistance supplied is for the advances to be deducted prior to the final payment. Pricing of inputs and production services can be a sensitive issue and sponsors should charge no more than prevailing commercial prices. Where the sponsor buys inputs in bulk for delivery to farmers, charges made for handling and transport should be clearly explained to the farmers. Charges to the farmers for services such as ploughing and harvesting should not be augmented to cover the inefficiency of management. When available, farmers should have the option to use commercial ploughing services if they are less expensive than those offered by the company. Where outside contractors are used, it is the responsibility of the extension staff to ensure that the work meets the required standards. The normal practice is that management pays the cost of the service to the tractor contractors after the work has been approved and then charges that cost to the farmers' accounts.

In Ghana, cotton companies used to provide "free" inputs to farmers and then offer a relatively low price for seed cotton in order to recover the cost. However, this was found unsatisfactory as, in effect, the more farmers produced the more they paid back, and the companies soon changed to the system of deducting individual farmer advances.³⁸ The idea of paying a low product price to recoup the cost of inputs supplied on credit is not new. It was, for example, widely practised by export crop boards in much of Africa.

³⁸ Shepherd, A.W. and Farolfi, S., 1999: 33, quoting Coulter, J., Stringfellow, R. and Asante, E.O., 1995.

Providing logistical support

Another key management function is to organize input distribution, container deliveries (bags, boxes, slings, etc.) and the strict timetabling of transport, especially at harvesting time. This is a vital area for management because logistical problems jeopardize both the sponsor's profitability and the relationship between sponsor and farmer. In the Philippines, for example, the sponsor of a broiler contract experienced problems because the suppliers had, at times, difficulties in ensuring that poultry feed reached the farms on scheduled dates. Farm managers responded by either reducing the quantity of feed, which caused cannibalism among the birds, or buying substitute feeds, which may not have contained the same formulation of ingredients and supplements. There were also problems resulting from the late collection of marketable birds due to poor transport arrangements. In addition, there were allegations of pilferage of live birds and feed by the company's agents.

There can be particular problems where a crop requires processing immediately following harvest. Such crops include tea, sugar cane, tobacco and some vegetables for canning. In Malawi, tea grown by smallholders was rejected because it became over-wilted owing to the failure of the company to provide transport immediately after harvest. The company was obliged to advise farmers of its inability to provide transport at scheduled times, but often this was not done. Although the company was negligent, no compensation was paid. A similar situation has arisen in the sugar industry in Kenya. The sugar company provides transport but it is the responsibility of the farmers to ensure that their sugar cane is delivered within seventy-two hours. Poor logistical support will inevitably sour relations with farmers and reduce the viability of projects.

Purchasing the product

Management must ensure that staff are available to purchase the product from farmers as scheduled. Significant efforts must be made to avoid corruption in the buying process. Farmers must be able to verify the weights of the products they sell to the sponsor. Also, where produce is rejected without the farmer being present there is inevitable suspicion. Under no circumstances should the sponsor dispose of rejected produce without first giving the farmer the

opportunity to inspect it. Depending on the circumstances, buying may be carried out at the farmgate, at centralized buying locations or sometimes at the processing plant. Most produce must be purchased shortly after harvest or farm processing so that it is presented in its most favourable condition. When buying is carried out at the processing plant it is often impractical for rejected produce to be sent back to the farmer. However, the extension staff should notify farmers of the reasons why their produce was rejected and offer them the chance to visit the plant to inspect the rejected consignment. Good managers ensure that farmers or their representatives are present when produce is purchased.

MANAGING THE AGRONOMY

In China a large joint venture involving over 23 000 farmers ceased to operate after seven years because of management's failure to organize and direct harvesting and grading practices. It is important, therefore, that managers not only form competent field extension teams, but also plan effective production schedules. During the production season, supervision by extension services of all cultivation activities is essential, particularly to be sure that certain recommended practices are compatible with the farmers' ability to implement them. Significant factors in any venture's performance include:

- field extension services;
- transfer of technology;
- cropping schedules; and
- training and research.

Field extension services

Extension staff employed in contract farming ventures are usually the key link and the direct interface between the sponsor's management and farmers. They require a number of key skills that include:

1. A good comprehension of the crop(s) or animals under contract.
2. A sensitive and sympathetic understanding of the social customs, language and farming practices of the communities they work with.

3. An ability to communicate effectively with farmers and to organize and administer cropping schedules and buying procedures honestly and impartially.

They must also possess an understanding of agronomy, farm management techniques and the potential capabilities of the farmers with whom they work. When selecting extension personnel, consideration should be given to both the personal aptitudes and the formal qualifications of each applicant. In larger projects, senior extension staff and field agronomists should normally be educated to tertiary level. Junior personnel can be recruited from within local farming communities. Although they may lack formal education, they will have the advantage of local knowledge and field staff enlisted from local families can have a beneficial effect on sponsor-farmer relationships. Conversely, as a result of close relationships with immediate and extended families, there is a chance that quota distribution and buying practices can become corrupted.

Annex 6 outlines the varied tasks an extension officer is expected to carry out. Extension staff must first obtain the credibility and trust of the farmers they advise in order to successfully implement the policies of the sponsor. It will then be much easier for them to administer the strict regulatory procedures that are frequently necessary for the maintenance of quality standards and crop uniformity.

The deployment of extension staff may vary considerably. In the Pacific, a company buying maize, tobacco, vegetable crops and export papaya allocated one field officer to every 55 farmers. In a rice project in West Africa, each extension officer supervised 300 farmers, while a joint venture in China provided one technician for every 500 farmers.³⁹ The degree of responsibility of field extension staff depends on the project's structure whereas the extension worker to farmer ratio mainly depends on the type of venture. Sugar cane and cereal crops require a lower ratio. Intensive crops that need constant supervision are cut flowers, vegetables and tobacco. In addition to their job of coordinating farmers, the biggest challenge for extension staff is probably to encourage

³⁹ Carney, J.A., 1994: 170.

farmer participation in decision making while maintaining positive sponsor-farmer relationships.

Transfer of technology

Farmers will only accept new techniques if the adaptations result in higher yields and/or improved quality and if the cost of such techniques is more than offset by higher returns. The introduction of technologies can cause cultural adaptation problems for smallholder farmers, even though these technologies are often the most important benefit of the contract. A reported example of this comes from the Central American banana industry. It was found that the

Box 14

Management and technology transfer in India

Reports of tomato production under contract indicated that both yields and income levels increased because of contract farming. The reasons for the success of the project were identified as follows:

- Suitable disease-resistant varieties were introduced.
- Support was provided by local scientific agencies.
- Good seeding husbandry was practised in the nurseries.
- Appropriate crop management practices were introduced by the sponsors.
- Contracts were given in different locations to minimize risk.
- The staff was responsible for close monitoring of the crop at all stages.
- Farmers were encouraged to set their own quotas.
- Oversupply was controlled by specifying the required quantities well in advance of the harvest.
- Farmers assisted in drafting quality standards.
- Contracts of "defaulters" were cancelled.
- Adequate cold storage was available during the off-season to ensure processing throughput.

potential for gaining acceptance of new technology was greatest with farmers who had little or no prior knowledge of the crop.⁴⁰ The new growers had no preconceived ideas on how to grow bananas so they readily accepted the new technology. Managers and agribusiness agronomists should consider the following four basic questions before transferring technology through their extension staff:

1. *Intellectual capacity*: Do their employees have the ability to transfer appropriate changes?
2. *Technical feasibility*: Do the farmers have the inclination to accept new techniques?
3. *Economic viability*: Is the adaptation too costly, complex and risky for the farmer?
4. *Cultural acceptability*: Does change affect the general farming practices of the farmer?

The process of introducing new technology normally progresses through a number of stages as follows:⁴¹

1. *Awareness*: This is the stage when the concepts of adaptations are introduced by the sponsors' agronomists to their extension staff. The implications of these adaptations are, in turn, explained to farmers and their representatives.
2. *Benefit*: It is often necessary to carry out field trials in order to assess the benefits of new technology before it is introduced to farmers. Such trials should either realistically simulate conditions faced by farmers in contracted areas or be carried out by a sample of contracted farmers. Sponsors should not make sizeable investments, nor should they encourage farmers to do so unless there are strong indications that the adaptations will be profitable.

⁴⁰ Glover, D., 1983: 434.

⁴¹ Adapted from Lionberger, H.E., 1960: 3.

3. *Implementation:* This involves the extension of the adaptations to farmers through field demonstrations, trial plots and lectures by the technical and extension staff.
4. *Appraisal:* Appraisals of yields and quality will demonstrate to both farmers and extension officers the value of the adaptation. Such appraisals are particularly important when new varieties are introduced. Farmers who have obtained good results from a particular variety may be reluctant to plant a different one that may yield less but has other important characteristics, such as a high degree of tolerance to disease.

Cropping schedules

Scheduling refers to the timing of specific activities and the sequence in which those activities are carried out. This is important in order to accommodate climatic patterns and to ensure regular and consistent product supply to the sponsor's processing and/or packaging facilities. Efficient scheduling is vital where production by thousands of farmers has to be synchronized for the purposes of irrigation, the achievement of uniform crop quality and the organization of transportation at harvest. Processing capacities can be increased appreciably, for example, by implementing staggered transplanting. This may allow farmers to plant two fields in the same season, perhaps only four weeks apart.

Extension staff have the responsibility to schedule the sowing of seed beds, the transplanting of seedlings, and the cultivation and harvesting of the contracted crop within a defined climatic season and in harmony with the farmers' own cropping regimes. At the beginning of each season, management, extension staff and farmers should discuss and confirm all planned activity schedules. Managers should present the sequence and timing of each crop activity to farmers before the first sowings. Table 5 gives an example of a crop schedule of the various activities to be undertaken by farmers and management to ensure that the specifications outlined in the contract are met.

Strict regimes imposed by crop schedules can change the work routines of farmers. This can alter social relations, the gender division of labour and the control and utilization of land and farm resources. Farmers necessarily forfeit

Table 5
A cropping schedule for flue-cured tobacco under contract

Activity	Timing	Remarks
Crop planning	November-December	Management responsibility
Annual farmer registration and forum	December-January	Management-farmers
Field selection	December-January	Management responsibility
Field preparation	February-April	Contract specification 1
Farmer-management pre-crop forum	Early February	Management-farmers
Sowing of seed beds	20 February-31 May	Contract specification 2
Pest and disease control	20 February-31 July	Contract specification 3
Ridging - fertilizer application	1 April-30 April	Contract specification 4
Farmer-management pre-planting forum	Late April	Management-farmers
Transplanting	1 May-10 May	Contract specification 5
Field cultivation and weed control	1 May-31 July	Contract specification 6
Irrigation	When required	Contract specification 7
Farmer-management pre-harvesting forum	Early July	Management-farmers
Harvesting	15 July-10 October	Contract specification 8
Grading and buying	15 July-15 October	Contract specification 9
Field residue control	1 October-15 October	Farmer responsibility
Farmer-management end-of-crop forum	October	Management-farmers

Source: based on Eaton, C.S., 1998b: 127.

some degree of autonomy when they accept exacting timetables and contract specifications, but they do so in expectation of greater economic rewards.

Training and research

Management may consider organizing training programmes for extension staff and farmers in the form of regular lectures and field days as well as through the use of demonstration plots. Staff training can be provided by in-house lecturers and visiting teachers from scientific institutions or through external

training courses. Only when the extension officers have gained a comprehensive knowledge of the relevant product(s) and an understanding of their administrative responsibilities are they really in a position to transfer technology to farmers.

There are a number of ways in which the training of farmers can take place. Routine farm inspection visits by extension staff can usually include an element of technology transfer. More formal and regular meetings with farmer groups, conducted by senior extension and research personnel, can be held to concentrate on the relevant activity at the time, e.g. seed sowing, transplanting, fertilizing, pest and disease control or harvesting. There may be a need for up to six such meetings within a single season. When potentially controversial subjects such as grading standards and buying procedures are explained, it is preferable that project managers also attend. Another way to demonstrate innovative farming methods and improved varieties is by having field days in the sponsor's trial plots or in the fields of leading farmers. Management and research staff can give talks and farmers should be encouraged to voice both their positive and negative experiences of new adaptations.

All agricultural crops require some degree of research into issues such as variety behaviour, cultivation practices and rates and methods of pesticide and fertilizer application. If an operation is large enough it can sustain its own research programme. Smaller companies and individual developers must generally rely on either government services or other industry research. In practice, most projects have a limited research agenda, which is mainly focused on seed collection, demonstration plots and teaching.

FARMER-MANAGEMENT RELATIONS

As stressed elsewhere, the development and maintenance of a positive relationship between management and farmers is crucial for the stability of any venture. Adequate incentives, prompt payments, efficient extension services, the provision of timely logistical support and good communication links between management and farmers all play a central role in this process.

The establishment of forums that promote farmer-management dialogue on matters such as contract specifications, agronomic requirements and rectification of misunderstandings and conflict is essential. While almost all

contract structures are of necessity hierarchical in nature, farmer participation is essential. Forums offer a channel for experienced farmers to contribute to the structure of contracts and offer advice on local conditions. Managers may also have to address social issues and identify how they can positively contribute to the social and cultural life of the community. This approach cannot be seen as an alternative to effective supervision but as a complementary measure.⁴² The three most important issues managers must consider are:

- farmer-management forums;
- male-female relationships; and
- participation in community affairs.

Farmer-management forums

Intermediary bodies that link management and farmers for purposes of negotiation and interaction are necessary for all contracts. The absence of communication between farmers and managers can result in misconceptions, misunderstandings and, ultimately, confrontation and conflict. By creating farmer-management forums or similar channels, sponsors can negotiate contracts with farmers either directly or through their representatives.

Organizations that are set up to represent farmers need to be truly representative of the farmers and not simply an extension of management with a few token farmer representatives. For example, problems were experienced in Kenya's sugar industry because the organization supposedly representing the growers, for which the farmers had to pay a levy to cover operational costs, was managed by a board containing only four farmer representatives, whilst there were three representatives from the Government, one from the company and one banker.

Nomination by farmers of at least one representative from each locality provides communication directly between management and the contracted farmers rather than only through field extension staff. Ideally, the representatives should meet with management at least three times in a season. The first meeting should be at the beginning of each season in order to ratify the pricing structure

⁴² Springfellow, R., 1996: 23.

and to discuss the season's crop schedules and any new adaptations that management may want. A second meeting is advisable immediately before harvesting to discuss the crop's progress and to confirm buying procedures. A final meeting to review performance at the end of the harvest may coincide with the final payment to farmers.

In Thailand, a contractual arrangement involving a foreign sponsor highlighted the inexperience of the sponsor. Although the idea of a written contract was new to the area, the sponsor gave little consideration to its details until only a short time before the farmers transplanted their first crops. As a result, the crop was half grown before the contract was distributed. Furthermore, the contract needed four revisions and approval from the sponsor's head office. One unsatisfactory outcome was that the terms of the contract were worded such that farmers' representatives were responsible for the enforcement of the conditions, not the company. In another project in Kenya, farmers apparently did not comprehend or understand the conditions of the contract and expected payments despite the fact that yields did not cover the cost of production support provided.

Both such experiences justify farmer-management dialogue. Furthermore, it is desirable that all farmers attend formal registration meetings at the beginning of each season. Such meetings provide an opportunity to explain management's crop programme, the specifications of the contract and the farmers' obligations under the terms of the contract. Frank public discussions on the formulas of contracts and the clarification of technical specifications are as important as the formal ratification of the agreement itself.

Male-female relationships

Contract farming can be a catalyst for antagonism between men and women, and this can affect both productivity and farmer morale. Contracts in many developing countries are automatically made with male family heads. In China, a large venture with many thousands of farmers had contracts exclusively in the name of the senior male of each family although, in practice, females did the bulk of the work. When the contract nominee does not do the work the actual workers may not receive a just reward for their efforts. In one project there was a steady decline in crop production and a high ratio of voluntary

dropouts in a particular district. On investigation it was found that although wives, sisters and daughters carried out the majority of all crop activities, they failed to receive adequate payment from the registered male contractors. In subsequent seasons the females refused to work, a situation that resulted in the abandonment of many contracts. The situation was corrected by a change of policy by the sponsor, who stipulated that the contract be registered in the names of the actual workers. An incensed reaction by the former male contract holders proved short-lived, productivity was restored and farmer-company relationships improved substantially. Eventually several female farmers were elected as grower representatives to the project's forum.

In Kenya, the Tea Development Authority experienced tensions between management and women. The women were not encouraged to establish themselves as independent tea growers, with the Authority's policy being to favour only male household heads. This resulted in the alienation of active working females.⁴³ Such examples reflect poor foresight by sponsors concerning the aspirations of female farmers, as well as a failure to consider the subsistence crop requirements of the contracted farmers and their families. In short, attention should be given to allocating contracts and making payments to the principal workers rather than the household heads. It should be recognized, however, that this might be difficult to implement where traditional customs predominate. The critical factor is not so much who is the registered contractor but how the profits are distributed in relation to contribution and work effort.

Conflict is not restricted only to the use of labour and the distribution of economic returns. Land use and different priorities in relation to subsistence food crops and contracted crops can also be sources of intense household disharmony. In East Africa, the introduction of contracted tobacco conflicted with the cultivation of millet, an important subsistence crop. In another example, contracted rice production clashed with the cultivation of sorghum, a crop traditionally grown by women. An impasse was overcome only after the women successfully negotiated a compromise with their husbands.⁴⁴

⁴³ von Bülow, D. and Sørensen, A. in Little, P.D., 1994: 230.

⁴⁴ Jones, C. in Watts, M.J., 1994: 67; Heald, S. in Watts, M.J., 1994: 68.

Participation in community affairs

The educational, sporting and cultural activities of the farming community are often very important. The involvement of sponsors and their staff in the local community helps to create a positive atmosphere of partnership. Misunderstandings between sponsors and farmers can be at times rectified at social occasions, a natural follow-on from the more formal farmer-management forums.

A privately owned sugar project in Zimbabwe provided sewerage facilities, piped drinking water, a road network, medical and sports facilities, housing and schools to its farmers.⁴⁵ In another venture, charity horse races were jointly organized by management, extension staff and farmer volunteers. Considerable sums were raised and distributed to schools, libraries and health clinics, primarily those within the project's area of operation.

Company policies, based on recognized social and ecological responsibilities, create a positive social environment. Extra-contractual contributions by sponsors to the rural communities in which they operate are not only a positive contribution to the general community but assist in strengthening the system. However, such support must clearly be confined within the boundaries of economic logic, and farming communities should not become dependent on such contributions.

⁴⁵ Jackson, J.C. and Cheater, A.P., 1994: 144.

Chapter 6

Monitoring performance

This chapter emphasizes the need for monitoring and suggests methods for management to use to ensure that the objectives of the contract are achieved. It also considers issues related to the environment.

Monitoring quality and yields

- *Deterioration of quality can have far-reaching consequences for any venture while quantity shortfalls can reduce processing efficiency and jeopardize markets*
- *Quality controls should be carried out before, during and immediately after harvest*
- *Remedial measures may have to be implemented prior to harvest if the farmer fails to carry out recommended practices*
- *Sale by contracted farmers of extra-contractual production from other farmers must be avoided*
- *Techniques for estimating yields are visual observation or statistical analysis*
- *Estimates can then be used to prepare calculated yield indicators in order to identify products infiltrated from outside*
- *Production matrices represent a way of identifying the key components of production and postharvest performance*

Monitoring human resources

- *The human resources used in contract farming, i.e. the management and field staff of the sponsor and the farmers, need to be monitored*
- *Extension staff should be evaluated through visits to farmers' fields at least twice a year, so that management can see at first hand the extension worker's relationship with farmers and his or her knowledge of the crop*
- *Formal monitoring of the crop at all stages may lead to identification of factors that could cause poor production*
- *Extension staff will need to carry out routine visits to all farms, the frequency being determined by the nature of the crop*
- *All field activities, with dates, should be documented. Where possible, farmers should be encouraged to keep their own records*

Protecting the environment

- *Full consultation between farmers, extension staff and management is essential in selecting suitable land in order to avoid environmental degradation*
- *While management is usually interested in just one crop, it must recognize farmers' concern to protect their entire farming system*
- *There must be a willingness on the part of managers to learn from local experience*

Introduction

Most agricultural ventures are in a constant state of change as a consequence of new technologies, changing consumer demands and increasing farmer sophistication and knowledge. Regular attention thus needs to be given to all activities of contract farming ventures in order to take full account of such changes. Any anomalies that are found may require amendments to the contract, technological modifications or the reorganization of field extension services.

All farming ventures need reliable records to provide monitoring, evaluation and diagnostic functions of the key activities that determine the product's performance. Dependable statistical information on both past and current production is vital in order to provide all involved with the facts on which to base quota allocations, crop yield estimates and forward marketing strategies. Managers need to accumulate, analyse and distribute information not only for the maintenance of project and farmer records but also to evaluate production performance and calculate yield indicators. Such monitoring is particularly necessary in large ventures that involve thousands of farmers, where it is difficult for management to have close interaction with individual farmers.

This chapter emphasizes the need for monitoring and suggests methods for management to use to ensure that the objectives of the contract are achieved. The basic elements of monitoring, or "process control",⁴⁶ are essentially the same in all industrial or agricultural activities: management should identify each component, measure its performance, compare the results to a benchmark and, if necessary, take action to rectify any problem at an early stage.

MONITORING QUALITY AND YIELDS

A routine analysis should be carried out to ensure that current and future production remains within the quality and quantity parameters required. Deterioration of quality can have serious and far-reaching consequences for any business venture. Quality controls are especially critical for high-value crops such as exotic fresh fruits and many varieties of vegetables. Quantity shortfalls can reduce processing efficiency and jeopardize markets. How a project's extension staff can monitor quality and quantity is discussed below.

⁴⁶ Stevenson, W.J., 1986: 763.

Quality controls

Each venture must develop quality control and monitoring systems suitable for its particular operation. Management must prioritize monitoring procedures and decide how often they should be carried out, in what locations and who should be inspected and assessed. Checking product quality can take place before, during and immediately after harvesting as well as at the time farmers grade their own production and when the products reach the company's processing or packaging facilities.

Quality controls may start as specifications in a written contract or as verbal explanations of quality standards given in both pre-season and pre-harvest farmer-management meetings. Perhaps the most practical method is for management to demonstrate by visual presentation the quality criteria that must be met, either for the entire production or, where appropriate, for different grades. When extension staff at the farmgate or buyers at processing stations purchase crops they should explain to the farmers the reasons why they are grading the crop as they are. Where farmers have mixed their grades they should, if practical, be given the opportunity to regrade.

Some contracts contain clauses which specify that sponsors may carry out certain crop production activities if the farmer fails to meet cultivation specifications. Under such clauses, management may hire outside labour to eradicate weeds, apply insecticides or harvest mature crops. Such practices can be a frustrating, but necessary, feature of contract farming as the failure of a few farmers to follow recommended practices could jeopardize the production of neighbouring farmers. Some of the major causes of poor quality are the failure to apply fertilizer, ineffective weed and insect controls, disease, immature harvesting and indiscriminate grading and packaging. Quality can also be affected during any on-farm processing and after the raw material has been purchased from the farmer.

In one case involving quality manipulation, inferior crops from non-contractual sources were being sold to take advantage of the higher prices offered under the contract. At the same time, prime quality produce was being siphoned off to the open market for even higher prices. The managers admitted that they had lost control of the buying operation. Infiltration of non-contractual produce from unregulated sources may cause a deterioration of quality

standards, the introduction of disease and problems of excessive supply. To stop such practices, clauses in contracts could stipulate the designated origin of the contracted crop. However, this may be difficult to apply in the case of the informal individual developer who is buying crops from farmers over a wide area where it is virtually impossible to enforce agreements. In Uganda, cotton ginneries faced with this problem established the Uganda Ginners and

Box 15

Monitoring milk production in Croatia

Some 33 820 dairy farmers supply milk under contract to Croatia's biggest dairy. The company maintains records which include farm size, the number of milking cows, details of farm machinery and production data. Such information provides the basis for decisions on which farmers are able to expand their production.

Company staff members regularly monitor milk quality in addition to all the contractual obligations of the agreement. The company has stringent quality specifications that include milk fat, protein and acidity parameters. In addition, there are clauses in the agreement that specify the absence of colostrum, arsenic, mercury, antibiotics, cleansing agents and disinfectants. There are also other stipulations regarding micro-organism levels and milk temperature at delivery. Farmers obtain feedback information on milk quality through the group's 1 600 collection points. The company's technologists determine quality by sampling milk at either the pickup points or in laboratories, with samples being taken in the presence of both the farmer and the company representative. The company is under no obligation to collect milk that does not meet the quality standards specified in the contract and the contract authorizes the technologist to "punish" the producer with a 30-day ban on milk delivery. If antibiotics have been traced, the price of milk is reduced by 15 percent and repetition of this is considered a breach of contract. The farmer has the right to complain by writing down complaints in a register located at each pickup point if he/she believes the measurement terms have been violated.

Exporters Association, which placed monitors at each ginnery in an attempt to control extra-contractual sales that would lower quality standards.⁴⁷

Where problems regarding quality are encountered, a detailed investigation is necessary to discover why. One such study was carried out to identify why farmers harvested tobacco in a very immature state; a practice that resulted in the serious deterioration of leaf quality. The study highlighted a number of constraints cited by farmers and management that they alleged influenced immature harvesting. Their rationale for the poor harvesting is presented in Annex 9 with a summary of the study's evaluation of each of the perceived constraints.

Yield estimations

Yield forecasting has become increasingly important in agriculture for processing, marketing and budgeting as well as for monitoring of production. Where production is limited to a target quantity, any major shortfall can cause serious embarrassment for the sponsor as a result of inability to meet forward orders. Overproduction will result in expenditure above budgets, unnecessary and expensive stockpiles and quota reductions in following seasons. This will result in income loss for many farmers. The aim of all contract farming ventures is to maximize economic returns. It should be borne in mind that with some crops the highest yield does not necessarily mean the highest income as high yields may only be achieved at the expense of quality or through the uneconomic use of inputs.

There are two basic ways in which yields can be estimated: visual observation by experienced extension workers and, less commonly, by statistical analysis. Calculated yield indicators (CYI) can then identify farmers, villages or districts that may have infiltrated crops in to, or out of, the buying system. Excessive production could occur when farmers overplant their allocated quotas. Extension workers need to verify that the exact quantity allocated has been planted and also need to estimate the potential yield of each farmer. Normally, a farmer's crop yield should be estimated three times during a single season. The first estimate is based on the quota given at the

⁴⁷ Goodland, A. and Gordon, A., 1999: 20.

beginning of the season and is referred to as the target estimate; the second is carried out a short time after sowing or transplanting, once the crop is well established. A third estimate can be made when the crop is fully developed, normally immediately before the first harvest. If marked disparities occur between the final estimate and the actual quantity supplied, the variations must be explained and accounted for. In established projects individual crop estimates per unit area are often based on the mean of the previous three seasons. Yield estimates should be based on knowledge of production in the area or by trial plots that the sponsor has planted before quotas have been distributed to the farmers. If a new crop is introduced to a district, estimates should be based on the productivity of that particular crop grown in similar environments.

Calculated yield indicators

A number of methods can be used for forecasting crop yields. These include a top-down model using a hierarchy of variables to the point where optimum performance cannot be improved further, as well as the Bayesian model using categorical variables based on experience.⁴⁸ Another model for crop forecasting is through the Monte Carlo simulation method based on soil and management parameters.⁴⁹ In many cases, however, visual methods based on the knowledge of experienced field staff should suffice to estimate yields.

Annex 7 illustrates the use of calculated yield indicators (CYI). Higher than expected production justified an investigation to identify those villages introducing produce from outside the contract. The wide variation between actual and calculated yields discovered in this example reinforced the belief that extra-contractual production had been infiltrated into the project. Indicator models provide information for management to identify farmers who circumvent buying procedures. The modelling of a calculated yield indicator is, however, dependent on reliable data and the ability of the assessors to interpret it.

⁴⁸ Details are provided in Hammer, G.L. and Muchow, R.C., 1994: 222.

⁴⁹ Bouman, B.A.M., 1994: 1.

Production matrices

Simulated modelling of crop production on a scientific basis is a highly complex, ever-expanding and normally efficient discipline.⁵⁰ Analytical decision models, such as a production-marketing-consumption (PMC) matrix,⁵¹ are useful in agricultural projects to evaluate managerial, agronomic and infrastructural factors necessary for the success of the crop. The model was first introduced in California in 1979 to structure the production and marketing requirements of a new commercial crop, jojoba. The basic concept of the production matrix, a subsystem of the total PMC matrix, is to formally identify all the key components that influence production in terms of their significance, responsibility and performance. The information on which to base the performance assessment can be extracted from production statistics, farmer records and field observations.

The production matrix in Table 6 is structured not only as a tool for the use of managers but also to assure interested government agencies, farmers and extension workers that all aspects of a project are being monitored regularly and improved where necessary. It was designed for a multipartite export papaya project in the South Pacific. In addition to the farmers, the participants included a multinational corporation, a parastatal marketing organization and the government's agricultural department, which was responsible for quarantine controls and postharvest pesticide treatment.

The matrix identified all of the components necessary for production and postharvest handling and ranked these according to their importance in meeting the project's aims. Critical (C) components had to be achieved in their entirety otherwise the project would be placed in considerable jeopardy. Important (I) components generally had to be achieved to the maximum extent possible, although marginal performance of one or two such components would not necessarily endanger the project. Significant (S) components were considered important but not vital for the project's success.

Following the first season of fruit production, qualified personnel completed the matrix by rating the achievement. The achievement rankings of the various

⁵⁰ Penning de Vries, F.W.T., van Laar, H.H. and Kropff, M.J., eds., 1991: ix.

⁵¹ Knox, E.G. and Thiesch, A.A., eds., 1981.

Table 6
Production and postharvest matrix
for export papaya under contract

Component	Body Responsible	Significance Ranking	Achievement Ranking
Farmer selection	MNC	I	2
Quota allocation	MNC	I	2
Seed supply	MNC	I	3
Extension services	MNC	I	2
Farm machinery	F/MNC	S	3
Supply of material inputs	MNC	I	3
Research	MNC/M	S	2
Off-shore technology	G/MNC	S	3
Pest control	F	S	3
Irrigation	MNC	I	2
Farm labour requirements	F	I	3
Transplanting	F	S	3
Field cultivation	F	I	2
Harvesting	F	C	2
Grading	F/MNC/M	C	1
Storage	MNC	I	2
Packaging	M	I	1
Quarantine control and pesticide treatment	G	C	1
Air cargo	G	C	1

Source: Adapted from Eaton, C.S., 1990: 80.

Key:

Farmers (F)

Multinational corporation (MNC)

Marketing authority (M)

Government (G)

1 = Inadequate

2 = Adequate

3 = Objectives achieved

C = Critical

I = Important

S = Significant

components showed negative performances on the part of the farmers, the multinational corporation, the marketing authority and the government agency responsible for quarantine, for four critical components. The failure of the harvesting and grading activities, irregularities in the quarantine procedures and air cargo limitations eventually contributed to the collapse of the venture.

Contract farming, which normally incorporates new agronomic and management methods, needs constant feedback regarding the acceptance of new techniques by farmers, disease tolerance of new varieties and the changing work patterns and production capabilities of farmers. A production matrix can be used to provide a blueprint of all factors that should be described, monitored and evaluated.⁵² Where possible, such matrices should be developed in full consultation with farmers, for example at farmer-management forums.

MONITORING HUMAN RESOURCES

Managing, motivating and monitoring human resources involves the recruiting, training and deployment of employees as well as an appraisal of their work. The production performance of each farmer also needs to be recorded and assessed so as to determine the need for quota changes and, on occasion, the cancellation of contracts. To support the decisions that managers must make, which can affect the livelihoods of thousands of individuals, there must be detailed monitoring procedures. The two human resource areas that managers of ventures are directly responsible for are:

- appraising employees; and
- reviewing farmer performance.

Appraising employees

Employees who have been successful in an agribusiness context that does not involve contract farming may not easily make the transition to a contract farming environment. This can apply to senior management as well as to junior staff. Some highly competent and qualified staff members have proved unsatisfactory when required to work with farmers.

In projects with only a small number of employees, staff appraisals are relatively simple as the interactions between managers and their staff members are almost on a daily basis. When a project has hundreds of employees, personnel reviews are generally carried out at the departmental or sectional level. Extension staff can be evaluated through visits to farmers' fields. This

⁵² Knox, E.G. and Thiesch, A.A., eds., 1981:1-4.

should be done at least twice a year. The most practical times for such visits are usually before the first cultivation, a short time after transplanting and at the height of the harvest. This inspection gives the manager and the employee an opportunity to discuss on an informal basis the progress of the crop and the performance of the farmers under the guidance of that employee. The manager can observe at first hand the extension officer's relationships with the farmers, gain an insight of the employee's knowledge of the state of the crop and his or her ability to organize its logistics. The second method of appraisal is to formally review all employees at the end of each season. Their performance can be measured against their job responsibilities and production targets that were estimated at the beginning of the season.

Reviewing farmer performance

Formal monitoring of the crop at all stages of its development may lead to the identification of factors that could cause poor production. For instance, the failure of farmers to notice the early signs of disease may delay the application of fungicides, thus endangering both quality and yield. Extension staff must therefore carry out routine inspections of all the farms they supervise. For some crops, such as sugar cane and fruit, inspections may be on a weekly or fortnightly basis. For vegetable crops, several visits a week may be required. Simple report cards should be kept indicating each farmer's code, locality, quota, land unit, the estimate of production and the inputs advanced. The extension officers must document the dates of sowing, transplanting, irrigation, harvesting and any other major activity carried out, such as fertilizer application and chemical use. Comments on climatic conditions, standards achieved and advice given to the farmer should also be recorded. Wherever possible, farmers should be encouraged to maintain their own records of their use of farm inputs and of their production. An example of a comprehensive farmer performance record is presented in Annex 8.

At the end of every season the final production, product quality and net income of the farmers can be included in the records. By reviewing such information, management can estimate the farmers' attainable quotas for the following season. Farmer-management forums may then be used to advise

future quotas and, if necessary, provide explanations for any modifications to the quota as a whole or for individuals.

PROTECTING THE ENVIRONMENT

Ecological considerations combined with sound agricultural practices should have an important role in contract farming, although the sustainability of the farming system as it relates to the physical and social environment usually receives little attention from either agribusiness or governments. Environmental issues can vary not only from country to country but also from district to district and farm to farm. Deforestation, the depletion of water resources and soil degradation are major concerns that accompany any agricultural development. However, agribusiness is frequently interested only in a single crop whereas farmers usually have permanent multicropping systems and must take the sustainability of these into account when assessing the value of contract farming.

Environmental degeneration as a result of any form of farming can become a major problem if it is not controlled. The cultivation of crops on thin soils on very steep terraces encourages high levels of erosion. Twenty-five percent of crops in one contract farming venture in China were grown on land totally unsuitable for intense cultivation. All participants of the contract - sponsors, the local managers and the village committees - allowed production on steep slopes without any regulation or apparent concern. A recent survey in Fiji confirmed that at least 30 percent of that country's contracted sugar-cane crop is grown on unsuitable land. Pressures on agricultural land are forcing sugar-cane farmers on leased land to cultivate steeper slopes. These practices were given tacit approval by the parastatal sponsor, despite land-use legislation and evidence that the soils were eroding at a rate two to three times greater than the rate of replenishment.⁵³ This situation echoes similar attitudes to those found in Tasmania, Australia, where farmers cultivating crops under contract were unwilling to acknowledge that they had serious land degradation problems.⁵⁴

⁵³ Clarke, W. and Morrison, J., 1986: 10-14.

⁵⁴ Miller, L., 1995: 4.

Laws on control of land use are common in most countries but they are rarely enforced. Legislation governing the environment of one developing country includes "at least 25 Acts" relating to ecological policies and there are at least fourteen government and parastatal bodies that administer environmental issues, but the impact has been negligible. Action by sponsors and managers to address environmental concerns is ethically and economically imperative. The most practical way managers can control ecological compatibility is to ensure that all contracted fields are selected by the extension staff in consultation with the farmers. Choice of land should be based on criteria related to soil depth and quality, land slope and water resources. In addition, an understanding and knowledge of previous land usage is important and, if necessary, a crop rotation regime may have to be agreed with farmers. Decisions by management on land use on behalf of the contracted farmers are, however, common, with the extension staff selecting all fields. Experience indicates that when choosing land the opinions of farmers and those of management do not always coincide.

By gaining an understanding of the area and its farmers, managers can assess each farmer's production capacity and the effect the crop may have on the environment. The willingness of the managers to learn from local experiences, sometimes developed over several generations, is important when supervising farmers under contract. In the South Pacific, local knowledge was ignored by expatriate agronomists. When a government agency introduced bananas for migrant smallholder farmers to produce for export, the customary landowners informed the agency that it could lease as much land as it wanted but "it will never grow bananas". Although the venture was highly organized and adequately funded, the inherent infertility of the soils, a fact well understood by the landowners, resulted in the eventual collapse of the project. Political pressure to settle landless farmers from overpopulated areas, coupled with inappropriate technology, had caused a loss of farmer morale and land misuse.

Annexes

These annexes are referred to in the main body of the text. The reader's attention is drawn to the fact that the inclusion of the contracts in Annexes 3 and 5 does not represent endorsement by the authors and that they are included here, in part, as examples of contracts with some weaknesses.

Annex 1

Sponsor-farmer advance policies

An example of material
and cash advance conditions

The advance policy is designed to assist farmers to attain the required standards of crop production, as stated in the annual registration.

The cash advance incorporated in the policy is a form of incentive to complete recommended tasks in the interest of the crop and within the specified period. The school fees advance is not in the interest of the well-being of the crop and is therefore payable only when the Company is satisfied that the sum advanced is recoverable from the standing crop and within the crop year.

1. Material advances

- a) The Company will advance from stock all chemicals, fertilizer, insecticides, etc., required to produce the crop from the allocated land area. The issues must not exceed the recommended rate for each quota.
- b) The Company will advance from stock: hoes, handles, watering cans, seed-bed plastics and all established crop material requirements.

2. Land preparation

- a) The Company will pay the official ploughing/scarifying/ridging contractors on behalf of the farmers at prevailing rates.
- b) Farmers who own tractors and wish to plough their own land will be advanced a total of 30 litres of diesel per 20 acres for three ploughings. If the fuel issued is abused this privilege will be forfeited.

3. Irrigation

- a) In the event that farmers require irrigation, their accounts will be debited with the cost of the operation at prevailing Company rates.
- b) Similarly, if irrigation contractors are engaged, the Company undertakes to pay the contractors at agreed rates and debit farmers' accounts for the service.

4. Water pumps

- a) Should a farmer's request for a water pump for irrigation be approved, cash and school fee advances will be forfeited until the advance for the pump is **fully** repaid or deducted from proceeds. If the capital purchase exceeds US\$250.00, the debt may be repaid over two crops (cash/school fee advances forfeited for two seasons). Farmers with 40 acres or more will be eligible to acquire water pumps.
- b) If two or more farmers share the cost of the pump, the debt must be repaid the same year. Cash/school fee advances will be suspended until the sum advanced is fully recovered. In this case the individual quota could be below 40 acres.
- c) Letters will be sent to the farmers regarding Company ownership until the debt is fully repaid.

5. Water pump repairs

- a) Water pumps that require servicing or repairs must be sent no later than 28 February of each year to the stations with the farmer's full name, farm number, etc., and a brief note describing the fault or repairs to be carried out. The Company will either repair the pump at its own workshop or have it repaired outside. Farmers will be debited the cost of spare parts, workshop material and labour.
- b) Pumps delivered after the specified date will not be accepted and no arrangements will be made by the Company for repair or servicing.

6. Cash advance

- a) As an added incentive for improved crop quality, the Company will advance to farmers cash sums at the rate of US\$1.00 per acre payable after four weeks of transplanting, provided the farmer has cultivated his/her field according to Company policy on field management.
- b) Farmers who already have crop assignments to either the development bank or commercial banks or have previous debts with the Company or have purchased water pumps and still owe money to the Company will not receive any cash advance.

7. Second cash advance

- a) Farmers will be entitled to second cash advances at US\$1.00 per acre when their fields have been effectively treated with chemicals according to the field officer's instructions. Farmers with a capital advance will not qualify.

8. Land rent

- a) The Company will recognize land rent advances of up to US\$2.00 per acre. Landlords will be paid 50 percent of the total rent two weeks after planting and the balance at the end of the harvest.

9. Seed-bed rents*

- a) Seed-bed rent will also be paid at the rate of US\$1.10 per seed bed.

10. School fees

- a) The Company will advance school fees up to a maximum of US\$50.00 per farmer per term for second and third terms only if, in the opinion of area managers, the sum will be fully recoverable from the crop proceeds (within the crop year).
- b) The area manager, before approving the advance, will take into account the state of crop, performance, expected yields, debts and other commitments officially known to the Company. The beneficiaries of the school fees must in all cases be sons and daughters only, and will not extend to cousins, nephews, etc. The Company will not consider advances for boarding schools, university fees, examination fees, uniforms, or books or sports equipment.

Source: Adapted from Eaton, C.S., 1988: 116-118.

* Seed-bed rents are paid by the farmer to the landowners where groups of seed beds are situated. Many sponsors require, for supervision purposes, that farmers' seed beds are grouped together.

Annex 2

Agreement for contract farming of maize

Annual maize registration

The Company offers to buy grain maize. The conditions under which the crop will be grown and sold are outlined below.

Technical

1. The Company will allocate acreage that must not be exceeded.
2. All crop production activities must be followed in accordance with Company recommendations and instructions.
3. The Company guarantees to buy all grain maize produced from the allocated quota.
4. Buying will be at designated locations and buying slips will be issued immediately after purchase.
5. All maize fields must be effectively fenced against animals.

Financial

6. All necessary seed, chemicals and fertilizer will be supplied and charged to the farmers. Payment for pre-sowing cultivation charges may be advanced.
7. The pricing formula for grain purchase at 14.5 percent moisture level will be as follows:

(a) Production up to 3 500 kg/ha	=	20 cts/kg
(b) Production from 3 501 to 4 000 kg/ha	=	21 cts/kg
(c) Production from 4 001 kg/ha and over	=	22 cts/kg

8. Outlined below is an example of how the weight will be calculated. Assume, for example, that 500 kg are supplied with a 25% moisture content. ($100\% - 25\% = 75\%$)

Payment for 500 kg wet weight at 14.5% (moisture) is calculated as follows:

Required dry matter content of grain is $100\% - 14.5\% = 85.5\%$

$$\text{Equation: } \frac{500 \times 75\%}{85.5\%} = 438.5 \text{ kg net} \times [(a), (b), \text{ or } (c)]$$

9. Farmers will be strictly prohibited from selling maize covered under this agreement, either on the cob or in grain form, to any other buyer without the written consent of the Company. Any breach of this agreement will result in farmers forfeiting their contracts.
10. Bags will be supplied by the Company, which retains ownership thereof, and any loss will be debited to the farmer's account.
11. Farmers will be paid when their crops have been harvested and sold to the Company and all outstanding crop advances have been deducted.

If you wish to grow maize on the above terms and conditions, please complete this form and return it to the Company office before so that we may reserve your quota of hectares. Signed on / /19

Company
Manager

Farmer
Representative

Farmer
(Farm No _____)

Source: Southern Development Company (SDC), pers. comm.

Annex 3

Tobacco contract – Greece

European Community

Preliminary contract for cultivation of tobacco leaves

Tobacco District	County
Village	Area
No. of Farmer's Record	Code of Variety
Date of Signature	Farmer's Identification Card
Total Stremma*	Date of Recording
No. of Confirmation of Quota	Total Quota

Between

(Name and address of the buyer) called hereafter "first buyer-manipulator"

and

(Name and address of the farmer) called hereafter "the farmer"

the following preliminary contract is agreed in accordance with the Community laws and articles which are in effect for tobacco cultivation, and particularly the EEC Laws 2075/92, 3478/92 and 84/93.

1. The farmer undertakes to cultivate tobacco, within the area of suitable soils for tobacco, as follows:

Area	
Town or Village	
Name of field	stremma
Name of field	stremma
Name of field	stremma
Name of field	stremma
Name of field	stremma
Variety	

* One-tenth of a hectare or 1 000 m².

at a total yield that will not exceed kg, in accordance with the No. of National Tobacco Board (NTB) confirmation of quota, which is attached, to harvest in hands only ripe tobacco leaves, and to cure them with the method suitable for the cultivated variety.

2. If the cultivated variety is cured in the sun under plastic cover, the cover must be at 50-70 cm from the ground so that the curing shed will be open from all sides.
3. The farmer undertakes to use only the seeds or the plants from selected seeds that are approved by the first manipulator or the NTB. Also the farmer is obliged not to use chemicals which are forbidden for tobacco (organic chlorides, etc), and to use strictly only the chemicals approved for tobacco cultivation by the agronomists of the NTB or the buyers, and follow the instructions on the manufacturer's label.
4. The first buyer-manipulator has the right, within the period of validity of this contract, to carry out, in the presence of the farmer, control checks regarding the observance of the obligations that derive from this contract and to take samples against reimbursement.
5. The farmer undertakes the obligation to deliver to the first buyer all the tobacco yielded from the present contracted area that meets the minimum quality characteristics, is clean, pure, healthy, marketable and free from defects that are named in Annex 11 of Community Regulation 3478/92 and does not exceed the maximum quota confirmed, as stated in the above Article 1 of the present contract. Also, the farmer is not allowed to contract with any other buyer to cultivate in the same or different fields the tobacco variety that is the subject of the present contract.

Except in case of unexpected incidents, the farmer has to deliver to the first buyer-manipulator the whole of his yield before If in any case the delivery is not completed before 15 May 1994, the farmer loses the Community subsidy.

6. The first buyer-manipulator undertakes the obligation, within the limit of the maximum quota as stated in Article 1, to collect the whole yield, harvested from the present area, before..... (same date as Article 5 para 2).

In the case of delay of delivery after 15 May 1994 because of farmer's culpability, the first buyer-manipulator is released from the obligation of compulsory payment of the subsidy, or in case of delay of collection because of first buyer-manipulator's culpability, the latter bears the cost of the subsidy.

7. The tobacco must be delivered graded and baled according to the regulations provided for the specific variety in the Community law. In the case that baling string is required, this string must be of plant material; the use of synthetic material is strictly forbidden.
8. For the sorting method and other details regarding the delivery, it is agreed that all the standards practised in the Greek tobacco market in accordance with the Community regulations are valid.
9. The first buyer-manipulator is obliged to pay the farmer for every kg of tobacco delivered, an amount equal to the subsidy, which is ECU/kg for the 1993 crop and the tobacco variety contracted with the present (which with the current equivalence is..... drachmas/kg) according to an article of Community Regulation 3478/92.
10. The first buyer-regulator undertakes the obligation to pay to the farmer an amount above the subsidy (Article 8), which for the variety contracted with the present, is agreed as follows per quality:

I/II drachmas/kg

III drachmas/kg

IV drachmas/kg

and adding the subsidy of the above article (calculated with the present equivalence), the farmer will receive:

I/II drachmas + =

III drachmas + =

IV drachmas + =

It is agreed that the grading of the tobacco at the above qualities I/II, III and IV, will be according to the description of those qualities, as lately amended, included in Index I of Regulation 1727/70. The above index is an integral part of this contract; regardless of whether it no longer has effect.

11. In case of disagreement on the quality grading and the technical characteristics of the tobacco, differences will be settled at a first degree court of a three-member committee composed of one representative of the first buyer-manipulator and one of the farmer, under the presidency of the representative of the NTB in the particular area, or at the second degree court by a committee composed of the director or an agronomist named by the county where the farmer is located, a representative of the farmer and a representative of the first-buyer manipulator. The decision of this committee is binding for both parties.
12. The amount of the subsidy and the price per quality must be paid by the first buyer-manipulator within a month after the finish of delivery, by a bank or mail transfer.
13. The present contract is valid for one year.
14. The qualified court is agreed to be the court of the area of the defendant, in case the area of the buyer is out of Greece the qualified court is agreed to be that of the area of the farmer.

15. The present contract is under the law that is in effect for tobacco cultivation, and under the regulations of the Civil Code.
16. The signing of the final contract is agreed to be done at the latest by and the submission of the papers to the NTB before the
17. The farmer is a member of the farmer group which is recognized according to Regulation 84/93 and No..... of the Decision of the Minister of Agriculture.
18. The present pre-contract is not transferable and cannot be assigned; it is valid only between the present farmer and the first buyer-manipulator, according to Article 5 para 3 of Community Regulation 2075/92 and Article 2 of Community Regulation 3477/92. The present pre-contract, the submission of which is a precondition of the segment of the final contract between the first buyer-manipulator and the farmer group to which the farmer belongs, was structured and signed in four copies, one for each party, one to be submitted to the farmer group, and one to be an attached and inseparable part of the final contract of cultivation.

(Place-Date)

Signatures of contracted parties

The farmer

The first buyer-manipulator

Source: Adapted from Demeterious, G., pers. comm.

Annex 4

Export papaya agreement

Papaya registration form

The Company offers to buy fresh papaya of export quality as per National Marketing Authority (NMA) specifications. The conditions under which the crop is to be grown and purchased are outlined below:

Technical

1. The Company will allocate quotas that must not be exceeded.
2. All production activities must be in accordance with the Company's recommendations. Only varieties supplied by the Company may be planted.
3. The Company agrees to buy all exportable fruit produced from the allocated quota.
4. No fruit should be sold to any other person without prior approval by the Company.

Financial and Administrative

1. All seedlings and basic chemicals, fertilizers, etc., will be supplied and charged to the farmers' accounts.
2. Purchasing of clean fruit will be done by Company buyers and fruit will be graded as per the export specification and standards set by the NMA.
3. No fruit that originates outside the given quota is to be presented for sale.
4. The Company will buy all exportable quality fruit as per standard specification at.....cts/kg at a designated buying point.
5. Payment will be made on a fortnightly basis with 25 percent of gross sales proceeds being deducted for advances until the total sum is recovered.
6. If you agree and are willing to grow export papaya, please sign and return this form by
7. This agreement is valid until.....

Farmer's Signature _____

Company Manager _____

Farmer Representative (as witness) _____

Quota _____ (ha)

Annex 5

Swine raising contract – Thailand

At (Address)

On (Date)

This contract is made between (Name), the authorized representative of Co. Ltd., whose office is situated at who will be called hereafter "the Employer" and (Name), residing at, village of, Road, Sub-district, District, Province, who will be called hereafter "the Contractor."

Both parties have entered into this contract on the Terms, specified below:

1. The Employer agrees to hire the Contractor and the Contractor also agrees to be hired to raise (number) piglets per batch. The Employer is responsible for providing the piglets, animal feed, drugs, vaccines and necessary materials needed for swine raising to the Contractor. The Contractor is responsible to provide swine housing to raise the piglets till maturity. The Employer may provide 10 percent plus or minus of the agreed number of piglets but will not be considered to be violating this contract so long as the difference is not more than (number) piglets.
2. The swine house shall be built in accordance with the specifications provided by the Employer. The house shall have sufficient water, and suitable environmental conditions and topography for swine fattening.
3. The Employer shall provide piglets weighing 15-20 kg., together with animal feed, drugs, vaccines and required materials, to the Contractor. The Employer shall weigh every piglet before delivering it to the

Contractor. The Contractor shall carefully inspect all the items provided and acknowledge the receipt. The Contractor is required to keep the record of swine raising as well as the inventory of animal feed, drugs, vaccines and other materials in the forms approved by the Employer.

4. The Contractor shall provide efficient labourers for raising swine and cleaning swine housing and assist the Employer in the delivery of mature swine. The Employer or its representative shall give advice on the procedures to raise swine, including feeding, drug administration, vaccination and housing design. The Employer shall adhere strictly to this advice.
5. The Contractor agrees to facilitate inspection missions to be undertaken at any time by the Employer. The Contractor shall keep the records related to swine raising, including inventory of swine feed, drugs and vaccines, in a place ready for inspection. The Contractor shall deliver the used feed sacks to the Employer or its representative at the time prescribed by the Contractor.
6. The Contractor agrees to raise no other animals, e.g., elephants, horses, cattle, ducks, chickens, or swine from other sources, etc., that may carry disease, in the swine farm or at any place nearby in order to avoid any spread of disease.
7. If a piglet is sick, the Contractor shall immediately notify the Employer. If a piglet has died, the Contractor shall notify the Employer within 24 hours of death. The Contractor shall keep the carcass for the Employer or its representative to undertake an autopsy and certify the cause of death. If the Contractor fails to notify the Employer within the given time or has not kept the carcass for examination, the Employer shall assume that the swine is lost. In such case, the Contractor shall be liable, without any objection, for the fine and obligations in accordance with Item no. 10 under this contract.

8. When the swine weighs between 90 and 100 kg., the Employer shall fix the date for delivery. The Contractor shall facilitate the capture and means of transportation until the swine is effectively delivered to the Employer.
9. The Employer agrees to provide the following compensation to the Contractor:
 - 9.1 The Contractor shall receive Baht 1.5 per kg. of the increased weight against the original weight of the piglets. The final weight of fattened swine will be calculated based on the actual weight of fattened swine ready for delivery less the weight of the discarded swine and the original weight of the piglets.
 - 9.2 The Contractor shall receive a monetary incentive according to the Feed Conversion Ratio (FCR).

$$\text{FCR} = \frac{\text{Total Weight of Feed Received} - \text{Total Weight of Feed Returned}}{\text{Total Weight of Swine Delivered}}$$

[Details are then specified]

- 9.3 If the combination of death rate and discard rate is lower than four percent, provided that the mature swine is in good health, the following incentive structure shall be applied:

If the sum of death rate and discard rate is between 0.00-0.99 percent, Baht 900 will be given for the remaining swine.

If the sum of death rate and discard rate is between 1.00-1.99 percent, Baht 700 will be given for the remaining swine.

If the sum of death rate and discard rate is between 2.00-2.99 percent, Baht 500 will be given for the remaining swine.

- 9.4 The conditions described under Item 9.3 above will be applied only if the death rate is lower than four percent. If the sum of death rate

and discard rate is higher than four percent, the Contractor is not entitled to the incentive.

- 9.5 If the fattened swine is sick or unhealthy or its body weight is less than 70 kg., the Employer will discard such swine.
10. During the fattening process, the Contractor agrees that the Employer may confiscate the swine in case of the following:
- 10.1 If there is a loss in the number of swine without reasonable cause, the following fine structure will be applied:
- From 1 to 30 days after the start of the project, a fine of Baht 2 000 per swine
 - From 31 to 60 days, a fine of Baht 3 000 per swine
 - From 61 to 90 days, a fine of Baht 4 000 per swine
 - From 91 to date of delivery, a fine of Baht 5 000 per swine
- 10.2 If the feed is lost, a fine of Baht 500 per sack will be levied.
- 10.3 If the record of feeding is lost, a fine of Baht 500 per document lost will be applied.
- 10.4 If the swine die due to in-fighting, being killed by an other animal or by man or by an unknown cause, the Contractor agrees to be fined as follows:
- Weight of Fattening Swine x weight of dead swine – income earned from the sale of carcass
- The price of the fattened swine is the current announced price of the Employer.

- 10.5 If the remaining swine feed is spoiled due to any causes resulting in fungus attack, wet granules, torn sack, etc., the Contractor agrees to be fined according to the prevailing price of the swine feed.

The above fine is only for the damage incurred and the Employer still withholds the right to prosecute the Employer.

11. In fattening swine, the Contractor shall observe that the Feed Conversion Rate (FCR) is not higher than the standard appearing in the attachment to this contract. If the FCR is higher than 0.05 of the standard FCR, the following fine structure will be applied:

The FCR rate is 0.06 higher than standard FCR, the fine of Baht 0.03 for every kilogram increased.

The FCR rate is 0.07 higher than standard FCR, the fine of Baht 0.06 for every kilogram increased.

[etc., etc.]

12. The Employer shall calculate the fine under this contract at the end of the unit batch cycle. The Contractor will receive the final wage after the deduction of any fines.
13. The Contractor shall return any unused swine feed, drugs, vaccine and feeding materials including the sacks to the Employer after each batch cycle. If the Contractor fails to return or can return only part, the Contractor shall be liable for the fine in accordance with the prevailing announcement of the Employer.

If a sack of the feed is lost due to any cause, the Employer will be fined in accordance with the condition described under item 10.2, except in the case that the representative of the Employer has given a written justification of the cause.

14. This contract is effective from (date) until the time this contract is terminated.

However, the Employer solely withholds the rights to terminate the contract. In case of termination, the Employer will give a one-month notice after each batch cycle.

15. In case the Contractor violates the Terms of this contract, the Employer has the right to terminate the contract without giving any advance notice. The Employer may ask the Contractor to pay the fines.

This contract is made in duplicate with a copy retained by each party. Both the undersigned attest they thoroughly understand the terms of this contract in front of the witnesses.

Signed _____ (The Employer)	Signed _____ (The Contractor)
Signed _____ (The Witness)	Signed _____ (The Wife)
Signed _____ (The Witness)	Signed _____ (The Witness)
Signed _____ (The Witness)	Signed _____ (The Witness)

Source: Betagro Northern Agro-Industry, Chiangmai, Thailand, 1999.

Annex 6

Job description for field extension officers

1. Basic function

- a) To execute and manage day-to-day aspects of crops within the area of responsibility as defined by the Extension Manager.

2. Skills required

- a) Ability to motivate farmers and impart knowledge to them in order to achieve desired production targets.
- b) Knowledge and experience of general agricultural practices.
- c) Ability to compile periodic progress reports.
- d) Ability to use and maintain farm implements.

3. Working relationships

- a) Reports directly to the Extension Manager who is responsible for all Company projects.
- b) Maintains contact with all Company field and clerical staff.
- c) Supervises farmers and external ploughing contractors directly.

4. Specific duties and responsibilities

- a) Implement planting programmes and check that farmers do not exceed allocated quotas.
- b) Organize all field cultivation ensuring that the required standard is maintained.
- c) Supply (and invoice) farmers with all the agreed inputs, fertilizers, chemicals, insecticides, etc., ensuring that issues do not exceed the required amount.
- d) Be conversant with the overall Company policy in respect of a particular crop's diversification objectives.
- e) Buy the farmers' crops in accordance with the buying policy and procedure for that particular crop.

- f) Participate and contribute in all the programmes conducted by the training manager.
- g) Submit stock returns and notify stock clerk of any obsolete or damaged product.
- h) Carry out any other duty as required by the Company.

5. Key performance measures

- a) Effective implementation of Company's policies and timely implementation of duties.
- b) Ability to lead and motivate farmers.
- c) Maintenance of positive contacts with farmer representatives and promotion of good farmer relationships.

Source: Eaton, C.S., 1988: 122-123.

Annex 7

Calculated yield indicators (CYI)

One project's inflated yields warranted an investigation in order to identify and isolate villages that had circumvented a condition of the contract, that only production from the contracted area be sold. The method used to identify villages with some degree of accuracy was to analyse production by applying a calculated yield indicator (CYI). The indicator was modelled by using the filtered data from statistical regressions against yield using quantitative and qualitative (or categorical variable) information.

The CYI was applied to each of the 28 villages and calculations were made to determine how the observed yields deviated from the estimated value. The results, as presented in Table A2, indicated how much each village over- or under-produced. There was a wide variation between the actual yields (2 871 kg/ha) and those of the calculated yield indicator (1 864 kg/ha). The actual deliveries were 569 116 kg in excess of the CYI estimate, which was close to the visual estimates. Provided that its limitations are recognized, the CYI is one method that can statistically indicate the locations and extent of yield distortions

Table A1
Response (Y) and explanatory variables (x) for CYI

Variable	Form	Description and criteria
Y Yield	Quantitative	Kg/ha
x1 Ha/Farmer	Quantitative	Ha/farmer
x2 Farmer/PC*	Quantitative	Farmer/PC
x3 Ha/PC	Quantitative	Ha/PC
x4 Nitrogen	Quantitative	Soil analysis
x5 Phosphorus	Quantitative	Soil analysis
x6 Potash	Quantitative	Soil analysis
x7 Topography	Qualitative	1 = Steep 2 = Undulating 3 = Flat
x8 Management	Qualitative	1 = Indifferent 2 = Modest 3 = Above Average
x9 Seed bed	Qualitative	1 = Indifferent 2 = Modest 3 = Above Average
x10 Transplanting	Qualitative	1 = Indifferent 2 = Modest 3 = Above Average
x11 Harvesting	Qualitative	1 = Indifferent 2 = Modest 3 = Above Average
x12 Processing	Qualitative	1 = Indifferent 2 = Modest 3 = Above Average
x13 Rainfall Est.	Qualitative	1 = Unsatisfactory 2 = Satisfactory 3 = Good
x14 Rainfall Dev.	Qualitative	1 = Unsatisfactory 2 = Satisfactory 3 = Good

Source: Adapted from Eaton, C.S., (1998b: 182).

*Note: PC = Individual farmer's processing capacity.

Table A2
Calculated production yields versus actual production

Village Code	Hectares	Yields		Production		
		CYI (kg/ha)	Actual (kg/ha)	Estimated (kg)	Actual (kg)	Excess vs CYI est. (kg)
1	28.13	2 179	2 358	61 278	66 324	5 046
2	28.13	2 179	2 516	61 278	70 758	9 480
3	14.38	1 496	1 956	21 501	28 120	6 619
4	2.50	2 179	2 526	5 447	6 314	867
5	40.63	1 933	2 889	78 549	117 365	38 816
6	34.38	1 496	2 430	51 416	83 529	32 113
7	34.38	1 373	2 989	47 200	102 751	55 551
8	34.38	1 933	2 464	66 464	84 685	18 221
9	9.38	1 373	3 153	12 873	29 563	16 690
10	21.88	1 373	3 013	30 036	65 902	35 866
11	62.50	1 933	3 000	120 844	187 474	66 630
12	84.38	1 933	3 763	163 139	317 517	154 378
13	34.38	1 933	3 134	66 464	107 746	41 282
14	6.25	2 056	1 769	12 851	11 057	-1 794
15	1.88	2 056	2 910	3 855	5 457	1 602
16	2.50	1 373	3 136	3 433	7 840	4 407
17	2.50	2 056	1 683	5 140	4 208	-932
18	1.25	1 373	9 406	1 716	11 757	10 041
19	1.25	1 373	1 590	1 716	1 988	272
20	62.50	1 933	3 011	120 844	188 213	67 369
21	3.13	2 056	4 683	6 425	14 635	8 210
22	1.25	2 056	4 816	2 570	6 020	3 450
23	8.75	1 933	2 492	16 918	21 807	4 889
24	21.88	1 933	1 629	42 295	35 642	-6 653
25	4.38	2 616	2 539	11 447	11 106	-341
26	6.25	2 056	1 032	12 851	6 453	-6 398
27	9.38	1 933	2 115	18 127	19 829	1 702
28	2.50	2 616	3 311	6 541	8 277	1 736
565.00		1 864	2 871	1 053 218	1 622 337	569 116

Source: Adapted from Eaton, C.S., 1998: 201.

Annex 8

Farmer performance record

Crop Field technician

Plot size (ha) Soil type

Name Father's name

Village Agreement No.

1. History

- a) Farmer for past years.
- b) In scheme since: (date)
- c) Previous crop(s)
- d) Last application Date Quota (kgs)

2. Nursery

- a) Seed bed preparation commenced on:
- b) Seed bed preparation completed on:
- c) Quantity of farmyard manure applied (kgs)
- d) No. of seed beds: Size of seed beds:
- e) Variety of seed used:
- f) Quantity of seed used per seed bed (grams)
- g) Total quantity of seed used (grams)
- h) Seed sown area Date of sowing:
- i) Date of germination: Days sowing-germination:
- j) Dates of weeding: i ii iii iv
- k) No. of seedlings per m²
- l) Total no. of seedlings:
- m) Total no. of seedlings required:
- n) Surplus seedlings:
- o) Percentage of surplus seedlings:
- p) Seed-bed diseases and treatment:

3. Land preparation

Date

Depth (cms)

a) Ploughings:

b) Ridges:

4. Transplanting

From To

No. of days Spacing

5. Fertilization

Date

Fertilizer

Quantity (kgs)

Placement/position

6. Intercultivations*

Date

7. Insects – pests – diseases

Date

Insects, pests, diseases

Insecticides-pesticides applied

8. Production

No. of plants (originally planted)

No. of plants survived

No. of vacancies Percentage of vacancies

Estimated production kgs Actual production kgs

Difference kgs

* Weed cultivation between rows.

9. Irrigation record

Irrigation	Crop age (days)	Days after transplanting	Actual date of irrigation	Recommended date of irrigation	Time taken to irrigate field
First					
Second					

10. Harvesting dates

Date Initials of Growers

11. Grading

Primary grade kg
 Third grade kg
 Second grade kg
 First grade kg
 Premium grade kg

12. Observations and instructions given

Date Initials of Growers

Annex 9

Quality constraints – An illustration of perceptions

A study was carried out to identify why farmers harvested tobacco in a very immature state; a practice that resulted in the serious deterioration of leaf quality. The study highlighted a number of constraints cited by farmers and management that they alleged influenced immature harvesting. Their rationale (indicated below in *italics*) for the poor harvesting is presented with a summary of the study's evaluation of each of the perceived constraints.

Invalid explanations

Harvesting leaf before it's stolen. Only one instance where tobacco had allegedly been stolen was discovered during the investigation. However, not one of the 127 villages in the project had resident night guards in the fields, as was the case for watermelons cultivated in an adjacent area. The absence of guards indicated that the farmers did not consider stealing to be a problem. The complaints about stealing were advanced by management and not by either the field technicians or the farmers themselves. The investigator concluded that management used this excuse as a cover-up for their poor planning and coordination.

After heavy rain the leaf gets hot and cold. Prolonged rainfall during the later stages of the crop can stimulate a false ripening effect. Throughout the project area, the agronomist's advice on practices necessary for handling wet tobacco was totally ignored by both management and farmers.

The greener the leaf, the heavier the tobacco. The farmers presumed that production yields would decrease when the leaves turned yellow with maturity. On the contrary, harvesting unripe tobacco results in slightly lower yields than would be obtained with the fully mature leaf.

Reaping before heavy wind and hailstorms avoids damaged leaf. The recommended variety was brittle in character and farmers voiced concern if one or two leaves were prematurely broken by the wind. However, apart from rare localized squalls, wind damage was considered an insignificant hazard. Very heavy hail was more serious; a hailstorm can obliterate an entire crop, especially when the plants are fully grown. It was almost impossible to predict localized hailstorms; therefore reaping beforehand was considered an invalid excuse. Whenever hail or high winds cause leaf damage, it can only be accepted as an "Act of God" and appropriate damage control measures should be taken.

Partially valid explanations

Harvest the tobacco when the maturity spot appears. In the local rural idiom the "maturity spot" referred to leaf infection generally caused by fungal diseases. Farmers everywhere feel the need to harvest their crops at the first indication of disease. Tobacco leaf damaged by disease can be purchased and used, although it would normally be classified as a lower grade. This was basically a managerial problem: either there were insufficient disease controls prior to the infestation or there was a lack of understanding by management and farmers of how to handle that type of tobacco.

The urgency to harvest their maize crops. Normally the maize harvest coincided with the important last three weeks of the tobacco harvest. As demands on family labour were at their greatest at that time of the season, farmers may have opted to complete their tobacco harvest before starting on their maize crop. Such practices would increase the possibility of harvesting the top prime four to six leaves together, all at an immature stage.

Valid explanations

Greater need for barn space towards the end of the season. In some villages barn space for curing was poorly organized, resulting in excessive demand for space in the final few weeks of harvesting. This showed that extension staff should have allocated tobacco quotas on the capacity of each village to process its production rather than on its ability to grow the crop.

Farmers wanting to sow their winter wheat before the first frost. This factor was the most common explanation given by farmers and local management. A local government directive stated that winter wheat must be sown during a given period. The law directed that all maize, tobacco and other cash crops grown on land designated for wheat production had to be harvested by a stipulated date. There was a lack of communication between the government and the tobacco agency.

Arbitrary directive to close the barns. A real concern for the farmers was the serious possibility of the buying stations closing for the season before they were ready to sell their production. One farmer who was found harvesting the eight prime top leaves well before maturity remarked that the curing barns were “closing in a week”, the approximate time it would take to cure his leaves.

Of the nine explanations investigated, three fully valid constraints were held to be the responsibility of the agency that managed the project. A combination of poor planning, conflicting priorities between government agencies and the lack of an understanding by all participants of what constituted quality resulted in the closure of the project after seven years.

Glossary

Baysian model: A decision analysis based on the probabilities of experience, which can be revised as additional data becomes available. Reliable information on past production can provide a basis for a calculated yield indicator to estimate crop yields.

Calculated yield indicator: A predictor model, calculated from unbiased statistics, on which to determine the estimated range of crop yields against actual production. An important management aid when monitoring yield distortions in contract farming projects.

Contracted farmer: Any farmer who has made an agreement to grow a specific crop, or crops, for a buyer.

Cultural practices: Crop husbandry practices that include soil cultivation, sowing, transplanting, weed and pest control, and harvesting.

Directed smallholder farming: Where small-scale farmers are managed or organized by farmer cooperatives, government bodies, commodity agencies or the private sector. Directed contract farming requires a high level of management involvement in the farmer's production.

Extension staff: Employees of the sponsor who directly interact with farmers on all agronomic and administrative matters related to the contracted crop; sometimes called field officers or technicians.

Extra-contractual marketing: Selling or buying produce outside the conditions of a contract.

Intercropping: The interrow cultivation of two crops simultaneously in the same field.

Monoculture: The planting, cultivation and harvesting of a single crop in one season.

Monte Carlo simulation method: A simulation procedure used for farm planning.

Multipartite: A number of sponsors having joint ownership and responsibilities within a single project.

Multiple cropping (or multicropping): The growing of more than one crop on a single farm. Multiple cropping can comprise a series of activities that include relay planting and intercropping.

Parastatal: Statutory government organization. Sometimes known as a *quasi*-government agency or body.

Physical determinants: The significant characteristics of soil, climate and topography that influence crop production.

Plasma: In Indonesia, subcontracting of crops by a larger-scale farmer who then sells to a sponsor-processor.

Production matrix: A blueprint of important components in an agricultural development on which to benchmark significance, responsibility and achievement.

Project: Set of activities and organization, normally in a defined area, to develop agricultural production for economic reasons. The term is applied in this publication to refer to the total operation that grows a specific crop or a number of crops under contract farming arrangements.

Relay planting: Planting a rotating crop as seedlings together with another crop before the first crop is harvested.

Sharecropping (or share-farming): A farming system where a landowner normally provides the land and capital and the sharecropper provides the labour. The manner in which the produce is divided varies but normally the landowner receives a predetermined proportion of the crop either in cash or kind. A rudimentary form of contract farming.

Sponsors: In the context of this publication, sponsors are identified as individual entrepreneurs, multinationals, small private sector companies, parastatal agencies or farmer cooperatives.

Subsistence agriculture: A cropping system where farm production of the land is predominately consumed by the farmer and his extended family.

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Interest in contract farming is expanding, particularly in countries that previously followed a central planning policy and in those countries that have liberalized marketing through the closing down of marketing boards. Changes in consumption habits, such as the increasing number of fast food outlets, the growing role played by supermarkets and the continued expansion of world trade in fresh and processed products, have also provided the impetus for further development of contract farming. The purpose of this guide is to provide advice: first, to management of existing contract farming companies on how to improve their operations; second, to companies that are considering starting such ventures on the preconditions and management actions necessary for success; and third, to government officials seeking to promote new contract farming operations or monitor existing operations. The guide describes in detail the general *modus operandi*, internal functions and monitoring mechanisms of contract farming. It emphasizes that sustainable contract farming arrangements are only possible when the various parties see themselves involved in a long-term partnership.

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